AcuoSemantix™

Installation and Operations Guide

Release 5.3

Revision A

6/28/2011

AcuoSemantix Installation and Operations Guide

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Contents

1. Introduction

Purpose of this Installation and Operations Guide

Acuo Technologies prides itself on the customized assistance it provides to customers in support of the installation and implementation of new systems. This guide is to be used in conjunction with that process and serves as a reference for how to perform operational tasks for AcuoSemantix.

This guide describes and assumes all AcuoMed features are licensed and available as part of your current implementation. However, certain features are individually licensed and may, therefore, not be part of your currently installed AcuoMed system. Please contact Acuo Technologies if you would like to add more capabilities to your current AcuoMed implementation.

Who Should Read this Guide

This guide is written primarily for a system administrator who may typically work with a database administrator responsible for maintaining the Acuo Technologies server and applications. Much of what is involved with actually operating Acuo Technologies' products is installing and configuring them. Someone such as a system administrator or database administrator who is experienced using these types of products on a daily basis will best be able to perform the tasks described in this guide.

How to Use this Guide

Due to the fact that AcuoSemantix works in conjunction with AcuoMed and AcuoStore, it is recommended that you become familiar with those products and reference the user manuals for overviews on functionality that are used within the realm of AcuoSemantix. If you are simply referring to this guide at some point after the initial installation and implementation of the product, you will probably not need to revisit certain material such as the overview and initial installs sections. However, if you are new to Acuo Technologies' products, it is recommended that you read the Overview section to get a better understanding of the general environment in which the products operate and the functions they perform. After that, refer to the other chapters of the guide for specific information on the tasks you need to perform.

Related Documents and Reference Sources

There are a number of very useful related documents and reference sources that you may want to review. These include the following:

- The AcuoMed Image Manager Installation and Operations Guide (included with an AcuoMed install).
- The AcuoStore Digital Asset Manager Installation and Operations Guide (included with an AcuoStore install).
- The AcuoMed Image Manager DICOM Conformance Statement. This document is available in PDF format at the Acuo Technologies Web site: http://www.acuotech.com.
- The *AcuoSemantix HL7 Conformance Statement*. This document is available in PDF format at the Acuo Technologies Web site: http://www.acuotech.com.
- DICOM and HL7 conformance statements for integrated devices.
- The DICOM 3.0 Standard.
- The Windows Server Help System and the Microsoft SQL Server Help System, accessed by choosing Help from the Windows Start menu.
- If you are using tape for near-line or offline storage, refer to the documentation supporting these products. This includes device documentation and related HSM (Hierarchical Storage Management) information such as Microsoft RSS

and RSM information in the Microsoft Windows Help System, or other vendor's tape-based storage management systems.

- If you are using tape or other HSM products used as a backup utility, please refer to the documentation supporting these products.

Conventions Used in this Guide

It is important to keep in mind a few basic conventions used for presenting information in this document. These conventions are summarized below.

Procedures

As much as possible, instructions for performing installation and operational tasks are presented by means of procedures. A procedure consists of several numbered or lettered steps to be performed in sequence. Procedure steps are numbered and may include additional explanatory information as is appropriate. Here is an example of how procedure steps appear in this manual:

1. Before beginning installation, review configuration recommendations.
2. Backup up the target system databases.
    a. Backup the AcuoMed database.
    b. Backup the AcuoStore database.
    c. Backup all AcuoMed Dicom databases.
3. Perform a full backup of the target system registry.

Optional Procedure Steps

Certain steps in a procedure may not be required in all cases. Procedure steps that contain optional actions are indicated by the word (Optional) in parenthesis at the beginning of the procedure step, as shown in the example here:

1. (Optional) For maximum protection, make a second backup of your current data before beginning installation.

Keys, Buttons and Entering Text

All references to pushing specific keyboard keys, clicking buttons and/or entering text generally appear in **bold**, *italics*, and/or “inside double quotes”. The following examples are provided for reference:

- Set up a new default prefetch rule and enter the text “esdefault” in the ***Station AE Title*** field.
- Name the Data Point “**Acuo_Datapoint**”, then click the button “Create and Edit”.

Notes

Notes provide additional explanatory information, special instructions and/or helpful hints that are deemed significant. The following is an example of a note (they are enclosed within a solid horizontal line at the top and bottom):

NOTE**:** You should read all notes to be sure not to miss any important installation or operations information.

How to Get Assistance

Recommended Support Process

In order to appropriately track your support requests during or after business hours, please use our automated web-based support system. Login to our web portal at http://www.acuotech.com/support.html or email your request to support@acuotech.com. By logging into our web based support portal our case tracking system will automatically generate a case number, notify our support staff, and return a reply email with case number to you for your records. Customers/partners have the ability to login and view outstanding/resolved cases, published solutions in our knowledge base, and other related material.

If you choose to email your support request, possibly with lower priority, our professional services personnel will create a case, assign a case number, and contact you at their earliest convenience.

Recommended support request email content

- From: The registered email of your Designated Support Personnel
- Subject: Short description of the problem
- Body: Detailed description of the problem **INCLUDING** contact information.

Other ways to contact Acuo Support

Alternatively, either during or after business hours, please feel free to contact us directly via telephone at the following number:

- 1-866-272-2286

2. AcuoSemantix Functional Overview

2-1 General Overview

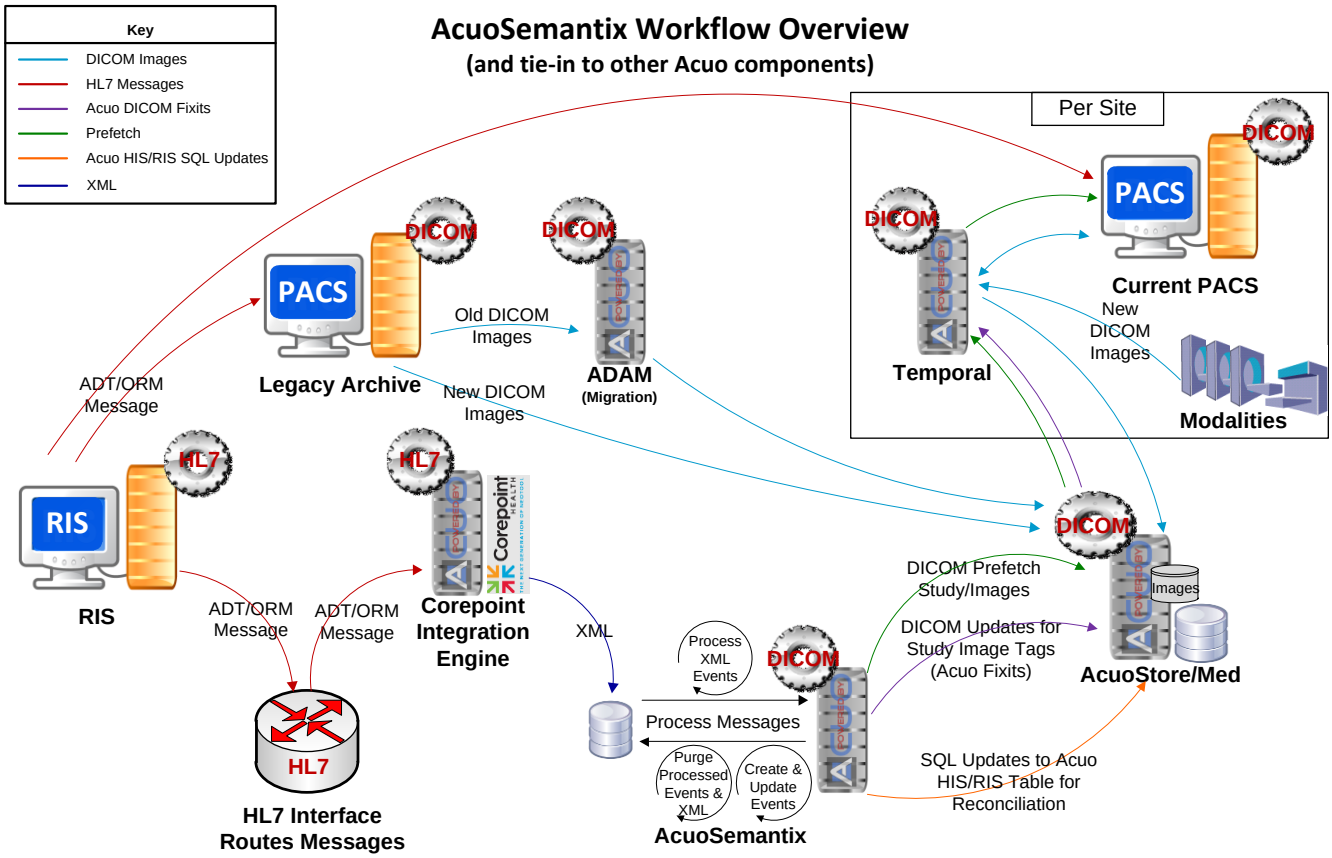
AcuoSemantix is an HL-7/XML/DICOM based solution designed to bridge the gap between HIS/RIS environments and DICOM PACS environments. AcuoSemantix receives and decodes HL7 messages, and generates DICOM workflow equivalent message(s) to existing AcuoMed Systems.

AcuoSemantix creates an environment without the need for a broker, supporting multiple HIS/RIS and AcuoMed installations in a single solution which can rapidly be added to any existing installation. Further, AcuoSemantix can scale centrally or control a fully decentralized network of AcuoMed nodes.

AcuoSemantix receives messages from one or more HIS/RIS systems and stores messages as normalized/validated XML in a SQL database. These events are then converted into DICOM workflow messages and transmitted to an AcuoMed Image Manager for PACS synchronization (keeping Patient info and Study info in sync), prefetching, and/or reconciliation.

AcuoMed's distributed nature is capable of creating a highly customized environment where workflow and intelligence live closest to the user/modality. This facilitates automated routing, reconciliation, and storage of DICOM objects based upon AcuoSemantix messaging.

See the figure below for an overview on AcuoSemantix workflow and tie-in to other Acuo components.



2-2 Detailed Overview

The General Overview section above gives a high level summary on what AcuoSemantix does and how it's tied into workflow. This "Detailed Overview" section is intended to provide a greater level of detail into the functionality of AcuoSemantix, from initial message receipt to the resulting activities that may occur.

One of the pre-requisites for running AcuoSemantix is the installation and configuration of Corepoint Integration Engine (see the sections below "Install Corepoint Integration Engine" and "Configure Corepoint Integration Engine"). Corepoint Integration Engine provides the ability to build and manage interfaces to allow different applications to communicate seamlessly across a healthcare enterprise.

The following steps describe the flow of activity as Corepoint Integration Engine first receives an HL7 message, and how it leads to resulting actions initiated by AcuoSemantix:

1. An HL7 message is sent from an HL7 source (HIS/RIS) to Corepoint Integration Engine. In other environments the HIS/RIS may send to an intermediary HL7 interface that acts as an HL7 router and forwards the message to Corepoint.

2. The HL7 message is received by Corepoint Integration Engine and temporarily placed in the Microsoft Message Queue (MSMQ).

NOTE:	For a more detailed explanation of the MSMQ, please reference the "Corepoint Integration Engine System Pre-Requisites" section below.

3. Corepoint Integration Engine takes the HL7 message off the MSMQ, converts it to XML, and inserts it into the "**T_ARPS_HL7_TO_XML_REPRESENTATION**" table of the AcuoSemantix database (or MedSemantix-es database). If Corepoint has a problem reading the message and/or inserting it into the AcuoSemantix database, the message is saved to a Corepoint Error log in the directory where Corepoint is installed (generally *C:\Program Files (x86)\Corepoint Health\Corepoint Integration Engine\Logs)*.

NOTE:	The insert time of the entry is logged into the column "ARPS_HX_INSERTDATETIME". This logs the Greenwich Mean Time (GMT) when the event was inserted. This information may be useful in troubleshooting scenarios when the timing between message receipt and resulting actions needs to be investigated.

4. After an entry is inserted into the "T_ARPS_HL7_TO_XML_REPRESENTATION" table by Corepoint Integration Engine, AcuoSemantix recognizes the entry and then logs a corresponding event in the "**T_ARPS_RIS_EVENTS**" table. Various information is logged in the "T_ARPS_RIS_EVENTS" table, including insert time, message type, and whether or not it has been processed or validated. It essentially indicates the "status" of all messages that have been received. At this point in time, AcuoSemantix takes over the processing of the message and resulting activities.

NOTE:	The interval of time that AcuoSemantix checks for new messages (or new entries inserted into the "T_ARPS_HL7_TO_XML_REPRESENTATION" table) is configured in the ***HL7MessagePollingTimer*** parameter of the "**AcuoSemantixConfig.xml"** file. See the section below "Configure AcuoSemantix" for further details. The table that Corepoint Integration Engine inserts into ("…XML_REPRESENTATION") and the table that AcuoSemantix correspondingly inserts into ("…RIS_EVENTS") should generally remain in-sync and have the same number of entries present. If these two tables are not in-sync and the number of entries starts to drift significantly, further analysis should occur as this tends to indicate issues or delays with message processing. In some scenarios where a large amount of messages is received in a short period of time, messages may get inserted by Corepoint faster than they are processed (thus, the difference in number of entries between the above 2 tables may be more likely to rise during that time).

5. After AcuoSemantix properly picks up the message and puts it into the "T_ARPS_RIS_EVENTS" table, the next step for AcuoSemantix is to determine which activities or resulting actions should be performed. This information comes from the configuration file "ActivityList.xml", found at *C:\Program Files (x86)\Acuo Technologies\AcuoSemantix.* All actions performed by AcuoSemantix involve sending information to a connected AcuoMed/AcuoStore system. For further details, please see the section "Configure AcuoSemantix" below. Generally, the resulting actions that may occur are:
    - Prefetching - queuing Batch Move jobs on an AcuoMed system
    - Updating the Acuo His/Ris tables – commonly used in conjunction with the Reconciliation and Auto-Mapping feature inside AcuoMed
    - Generating the following patient or study update messages to keep Acuo Databases in-sync (these are referred to as Acuo "Fixit" messages):
        i. Patient Update Messages (update patient demographic information)
        ii. Study Update Messages (update study/order information)
        iii. Patient Merge Messages (merging 2 patients into 1)

3. Install and Configure AcuoMed/AcuoStore

AcuoSemantix requires a separate install of AcuoMed/AcuoStore that will receive RIS updates and DICOM messages from AcuoSemantix. Please reference the most recent Acuo Release Notes for currently supported Operating Systems, versions of SQL Server, and corresponding Service Packs.

The following steps are required for the AcuoMed/AcuoStore system:

1. Install and configure AcuoMed/AcuoStore. Supported versions include version 5.3.X and later (the "X" in this version may change as subsequent Service Packs are released for AcuoMed/AcuoStore). Please refer to the AcuoMed and AcuoStore installation and operations guides for more details.

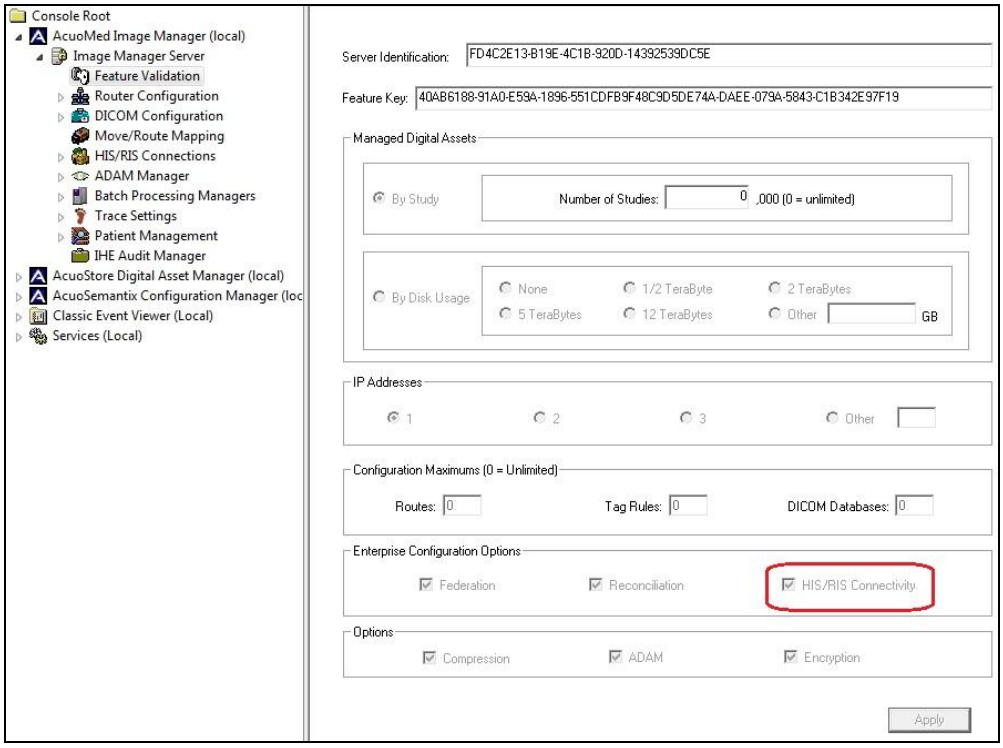
NOTE:	The version of AcuoMed/AcuoStore to be installed is referenced above as "5.3.X". The "X" represents the Service Pack Level of the release, and since subsequent Service Packs could be supported and released this number could change. Contact an Acuo Support Engineer for the most recently released Service Pack.

2. If fixit messages will be generated by AcuoSemantix and sent to AcuoMed, the "Basic Text SR" SOP (1.2.840.10008.5.1.4.1.1.88.11) must be configured as accepted under the configuration of the Called AE Name that will receive fixit messages.

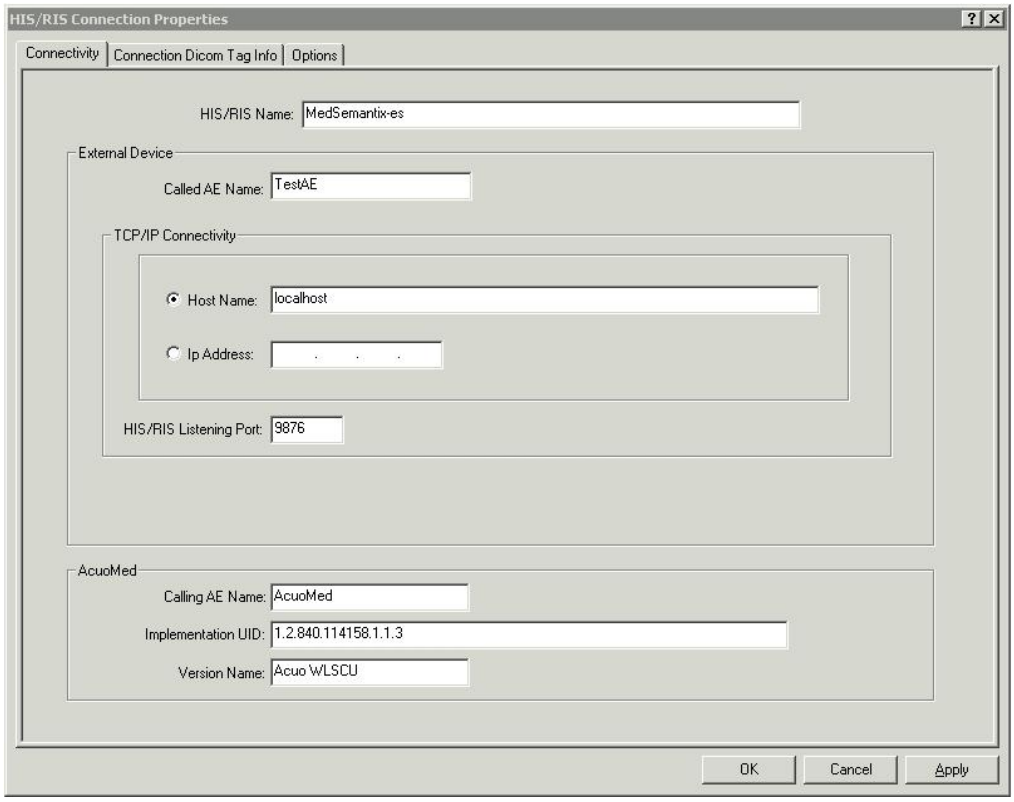
NOTE:	The Called AE Name that will receive fixit messages is configured in the "AcuoSemantixConfig.xml" file under the "**AETitle_AcuoMed"** parameter. Please refer to the section below "Configure AcuoSemantix" for details on how to configure AcuoSemantix to send fixit messages.

3. Apply a feature key which includes "HIS/RIS Connectivity". This is minimally required for AcuoSemantix.

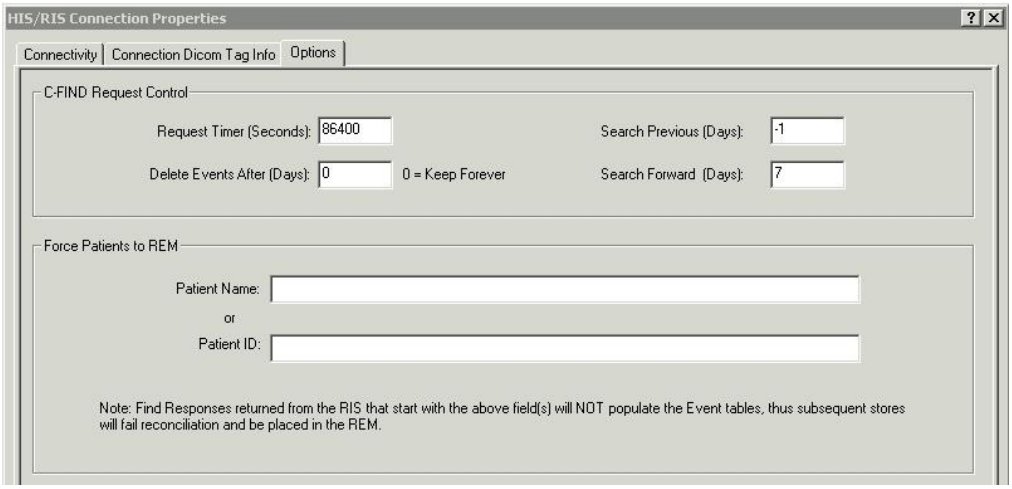
NOTE:	The AcuoMed Database must be installed before a feature key can be applied. Feature keys are obtained by contacting Acuo's Professional Services Team.



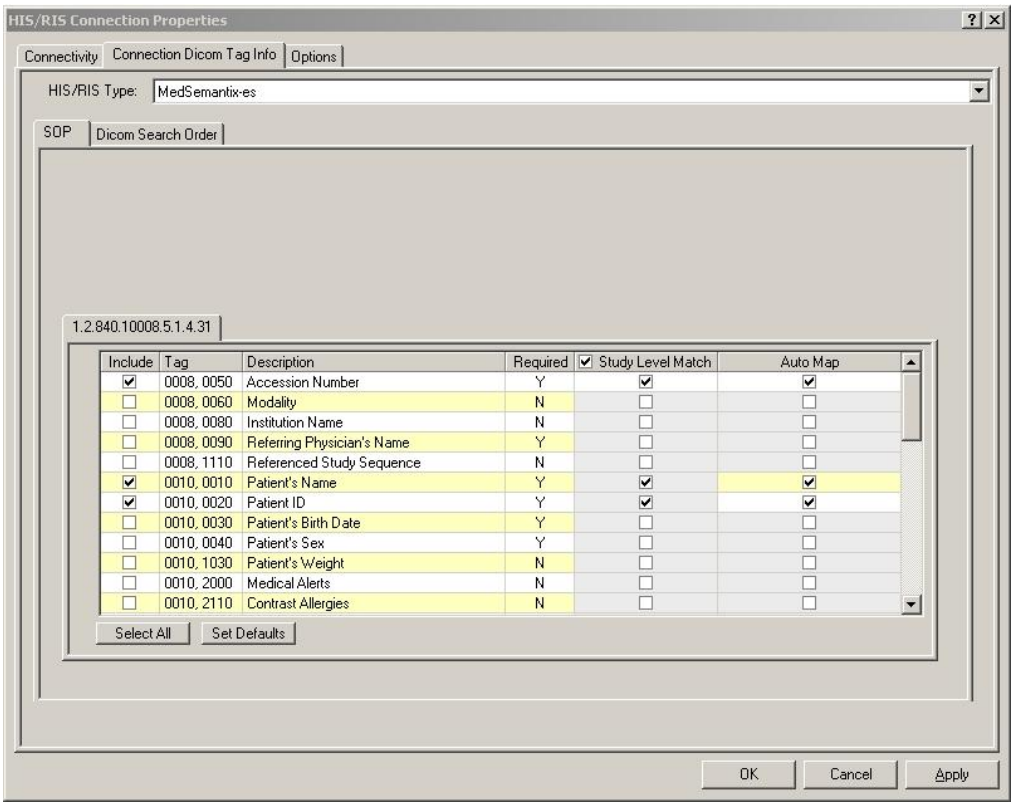
4. Set up a new HIS/RIS connection and perform the following steps (in order):
    a. On the “Connectivity” tab, enter data in all empty fields → HIS/RIS Name, Called AE Name, Host Name or IP, Listening Port, Calling AE Name.
        - The HIS/RIS Name is simply a text description of the connection.
        - Anything can be entered in the other fields (they are not used for AcuoSemantix).



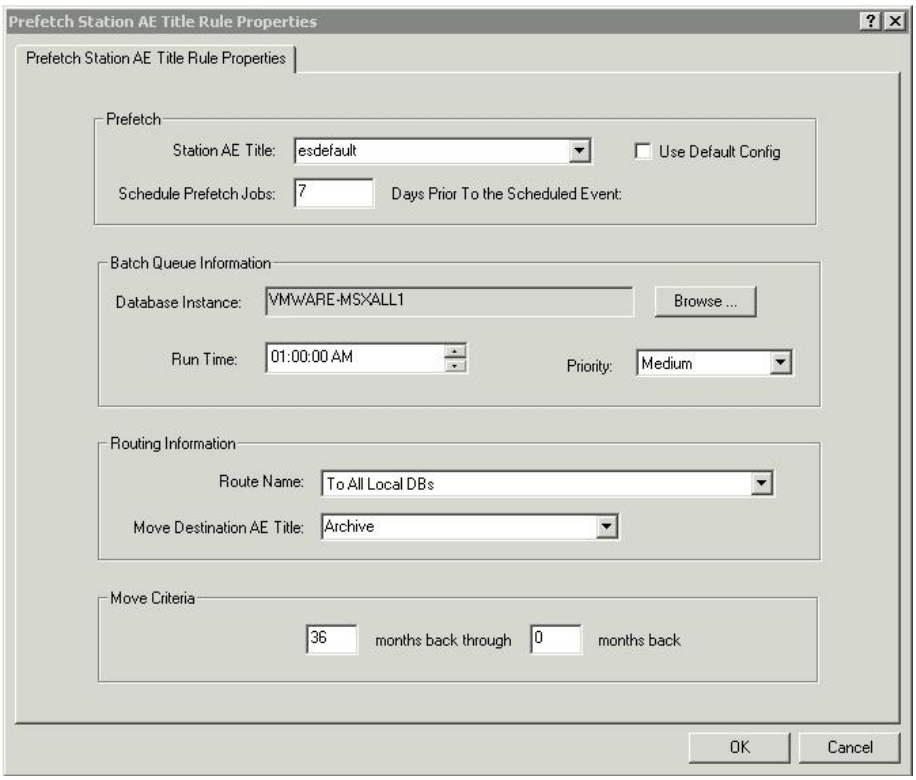
    b. On the “Options” tab, change the “Request Timer” to 86400 and “Delete Events After (Days)” to 0. Leave the “Search Previous (Days)” and “Search Forward (Days)” fields at their defaults (-1 and 7).



c. On the “Connection Dicom Tag Info” tab, select “MedSemantix-es” as the HIS/RIS Type. If reconciliation is to be used, select the appropriate Matching and Auto-Mapping tags. Leave all other defaults as is. Click “OK” to add the connection.



5. Set up a new default prefetch rule and enter the text "**esdefault**" in the ***Station AE Title*** field. Edit all other fields in the Prefetch Station AE Title Rule Properties screen as necessary (Batch Queue Information, Routing Information, and Move Criteria sections). Click "OK" to add the prefetch rule.



NOTE:	The default prefetch rule used by AcuoSemantix is "esdefault". This is minimally required in order to utilize prefetching (the queuing of Batch Move jobs to an AcuoMed system). Other prefetch rules may optionally be set up to do prefetching, however the Station AE Title of the prefetch rule must match the Assigned Patient Location in the PV1-3 segment (or another defined segment) of the incoming HL7 message in order to take effect. For further information, see the "PrefetchStationMapping" parameter in the "Modify AcuoSemantixConfig.xml" section (sub-section under "Configure AcuoSemantix" below).

4. AcuoSemantix System Pre-Requisites

The following steps should be performed to satisfy the pre-requisites for the system where AcuoSemantix is installed. Please reference the most recent Acuo Release Notes for currently supported Operating Systems, versions of SQL Server, and corresponding Service Packs.

1. Install one of the following operating systems:
    - Windows Server 2008 R2
    - Windows Server 2008 x64 or x86 (with SP2)
2. Install one of the following versions of SQL Server:
    - SQL Server 2008 R2
    - SQL Server 2008 (with SP2)
3. Install ALL high priority (important/critical) updates from the Microsoft Windows Update website.
4. Install SQL Server Management Studio Express, if needed (GUI tool to manage the database).

5. Install AcuoSemantix

5-1 General Installation & Upgrade Requirements

There are specific requirements for installing, uninstalling, and upgrading Acuo products when AcuoSemantix is involved. The following is the initial install order when AcuoSemantix, AcuoStore, and AcuoMed are all on the same system:

➔ Please reference the most recent release notes for installation of other Acuo components. The information listed here is a subset of the full installation instructions, and is intended to indicate when AcuoSemantix should be installed relative to AcuoMed/AcuoStore.

General Installation Order:

1. Install AcuoStore / AcuoMed [A]
2. Install AcuoSemantix [B]

[A, B] = If AcuoStore, AcuoMed or AcuoSemantix need to be subsequently upgraded at a Patch or Hotfix level, the upgrades can be performed without removing/uninstalling through the Control Panel / Programs and Features (Add or Remove Programs in Windows 2003).

[A =] If AcuoStore or AcuoMed need to be upgraded at a Service Pack level or above, AcuoSemantix should be manually removed through "Programs and Features" first (before performing the upgrade). All XML files in the *C:\Program Files (x86)\Acuo Technologies\AcuoSemantix* directory should be backed up prior to performing a Service Pack level upgrade for AcuoStore/AcuoMed. See the section below titled "AcuoSemantix Upgrade Installation" for details.

[B =] If AcuoSemantix is the only Acuo product being upgraded at a Service Pack level (this is less common), the AcuoSemantix upgrade may occur without removing AcuoMed or AcuoStore. See the section below titled "AcuoSemantix Upgrade Installation" for details.

If all Acuo products are to be completely removed and/or upgraded, the uninstall order is the reverse of the install order listed above (uninstall AcuoSemantix, uninstall AcuoMed, uninstall AcuoStore).

General Uninstall Order (for Service Pack level upgrades and above):

1. Uninstall AcuoSemantix
2. Uninstall AcuoMed / AcuoStore

5-2 AcuoSemantix New Installation

For new installations of AcuoSemantix, perform the following steps:

NOTE:	For the 5.3.1 release, AcuoSemantix was renamed from Acuo MedSemantix-es to AcuoSemantix (Acuo MedSemantix-es is the old name). Some components of the old product name may still be found on older systems, and/or in various areas of the AcuoSemantix GUI. Therefore, the old name of Acuo MedSemantix-es will be seen (and referenced) in various areas.

NOTE:	The 5.3.1 version of AcuoSemantix is ONLY compatible with the 5.3.1 version of AcuoStore/AcuoMed. As subsequent Service Packs for Acuo products is released, please contact Acuo Technologies Support for supported version combinations.

NOTE: Version numbers referenced or seen in screenshots below may vary (newer versions may have been released after this revision of the manual).

a. Double click the “Setup.exe” file to run the installer.
   - This will typically be in the following location inside the install folder for AcuoSemantix: **\AcuoSemantix 5.3.1.X\DiskImages\DISK1\Setup.exe**

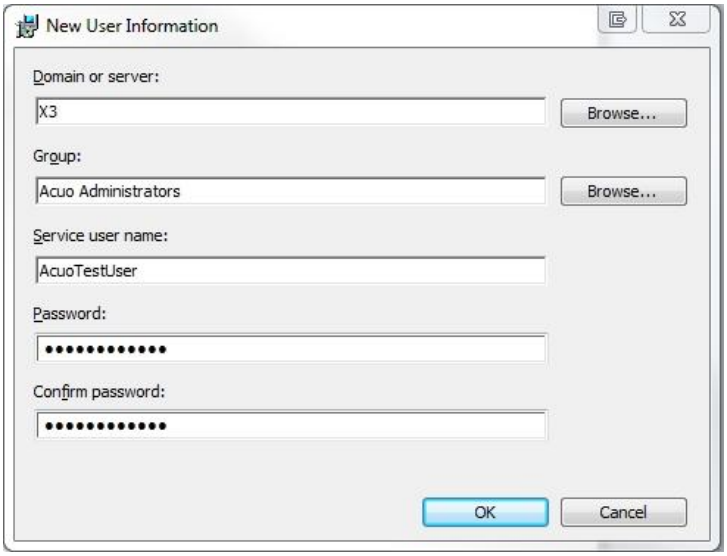
b. Click “Next” on the welcome screen.

c. Select the option to accept the license agreement, then click “Next”.

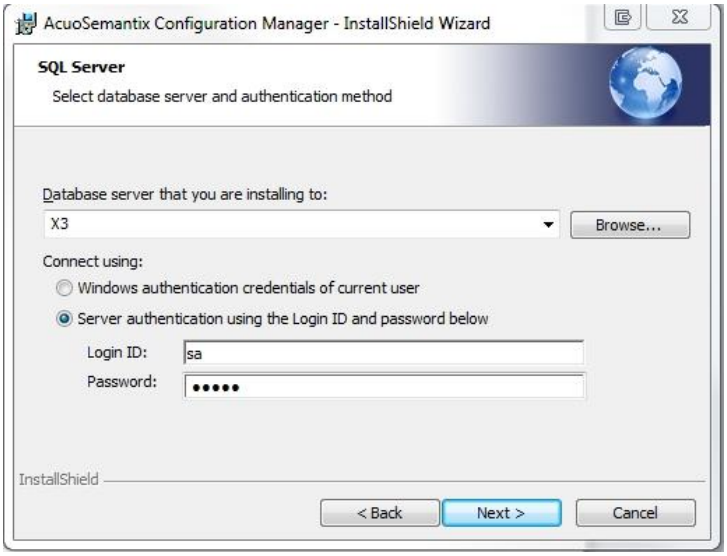
d. Enter any “User Name” and “Organization”, then click “Next”.

e. Enter the Service User Name and Password that will be used to run the AcuoSemantix service.

f. If needed, click the “New User Information” to create a new user.



g. On the SQL Server screen, select the database server you are installing the AcuoSemantix database to, as well as the authentication method (Windows authentication or SQL Server authentication using a login/password):



h. On the Database Installation screen, enter the following:
    a. Database Name
        i. If this is an upgrade installation (AcuoSemantix upgrade from a version prior to 5.3.1), the database name should default to “MedSemantix-es”, or whatever the database name was prior to 5.3.1 (the default DB name prior to 5.3.1 was “MedSemantix-es”).
    b. The location where the AcuoSemantix database file and log file will be saved.
        i. The default text for these fields is “DEFAULT”. If “DEFAULT” is specified in these fields, the location of the database file and log file will be determined by the default SQL Server database directory. To find the default directory, open up SQL Server Management Studio, right click on the instance name and select Properties. Select the “Database Settings” page, and go to the “Database Default Locations” section (Data and Log fields).
            - Note: If the default directories are changed in SQL Server, a restart of SQL Server is needed.

- Note: Prior to 5.3.1, the location of these files could not be changed in the AcuoSemantix (MedSemantix-es) installer. Therefore, the default SQL Server location was used for the location of the database file and log file.

ii. It is generally recommended that explicit paths be entered for the AcuoSemantix database file and log file locations (rather than leave the 2 fields set to "DEFAULT").

c. Enter the Database Login Name.
   i. If this is an upgrade installation (AcuoSemantix upgrade from a version prior to 5.3.1), the login name will generally default to "MedSemantix-es" (the default prior to 5.3.1).

d. The Password field currently cannot be changed. Please contact Acuo Technologies Support if this information is needed.

i. Select "Complete" for the Setup Type, then click "Next".

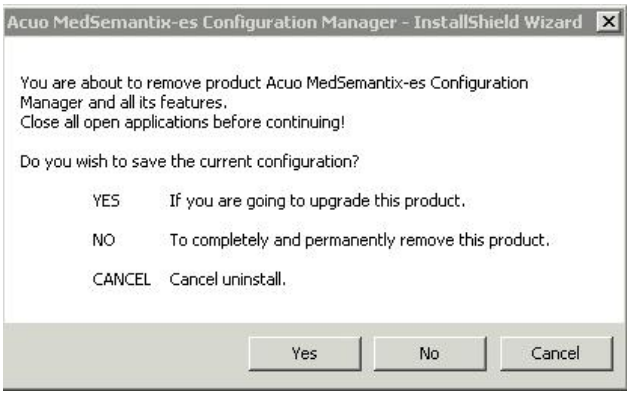
j. Click "Install" to begin the installation.

k. The following message is displayed upon a successful installation (if errors are encountered, please contact Acuo Technologies Support for assistance):

5-3 AcuoSemantix Upgrade Installation (Service Pack Level Upgrade)

If an existing version of AcuoSemantix is already installed, perform the steps below to upgrade to a newer Service Pack version. Please reference the Acuo Release Notes for additional notes on upgrade instructions.

a. Perform a full backup of all databases.
b. Backup the Acuo Technologies folder/file directory (e.g. → C:\Program Files (x86)\Acuo Technologies)
c. Backup the following Acuo Technologies registry keys (perform an export of the keys):
    a. HKEY_LOCAL_MACHINE \ SOFTWARE \ Wow6432Node \ Acuo Technologies (64 bit systems)
    b. HKEY_LOCAL_MACHINE \ SOFTWARE \ Acuo Technologies
d. Close the AcuoSemantix MMC, all other open MMCs, windows and applications.
e. Stop/Disable all Acuo Services and reboot the server.
f. Uninstall AcuoSemantix (or Acuo MedSemantix-es) through Control Panel / Programs and Features (Add or Remove Programs on Windows 2003). AcuoSemantix should be uninstalled FIRST (before other Acuo products).
    a. On the pop-up message that asks “Do you wish to save the current configuration?”, select No.



    b. Selecting “No” at this screen results in the following:
        i. The old product name (MedSemantix-es) is properly removed from the Service Name (in the Acuo MMC), File Directory and Registry. When AcuoSemantix is re-installed for the upgrade, this ensures a clean upgrade path without duplicate references for MedSemantix-es/AcuoSemantix.

ii. XML configuration files for AcuoSemantix from 5.2.1 will NOT be retained and carried over when 5.3.1 is installed. The configuration files in 5.3.1 have changed significantly, however some existing settings and values (that haven't changed) will generally need to be maintained and set to the same values upon upgrade (to preserve the same behavior before and after the upgrade). The configuration files should generally be backed up prior to starting the upgrade (see step above for backing up the folder/file directory), so the old configuration files should be readily accessible.

g. If other Acuo products are being upgraded, uninstall them through Control Panel / Programs and Features. For example:
    a. Uninstall ALO and AcuoHA.
    b. Uninstall AcuoMed.
    c. Uninstall AcuoStore.
    d. Uninstall all versions of Acuo Host Server Setup.

NOTE: If AcuoSemantix is the only product being upgraded, this step can be skipped.

h. If other products were uninstalled in the previous step, run through the installation instructions for all products (in the reverse order as the previous step) except AcuoSemantix as noted in the Acuo Release Notes and/or User Manual.
i. After installing all other products, install the new version of AcuoSemantix by the following the instructions as noted above in the "AcuoSemantix New Installation" section. Notable differences from the New Install section above:
    i. On the Database Installation screen, the database name and login should default to "MedSemantix-es", or whatever the database name was prior to 5.3.1 (the default DB name prior to 5.3.1 was "MedSemantix-es"). This may need to be changed accordingly.
    ii. On the Database Installation screen, it is generally recommended that explicit paths be entered for the AcuoSemantix database file and log file locations (rather than leave the 2 fields set to "DEFAULT").
    iii. Copy in the new set of XML configuration files for 5.3.1. Assistance will generally be needed from the Acuo Implementation or Support Team for this step.
j. Re-enable the AcuoSemantix Service back to Automatic and start the service.
k. Verify stability and successful processing of new messages. All messages received during the upgrade (while the AcuoSemantix Service was disabled) should be processed normally.

NOTE: When the AcuoSemantix (Acuo MedSemantix-es) Service is disabled during the upgrade, new incoming messages should be logged into the "…HL7_TO_XML_REPRESENTATION" table in the AcuoSemantix Database. After the upgrade is complete and the service is restarted, these messages should be processed.

6. Configure AcuoSemantix

There are 3 basic steps to configure AcuoSemantix (see the subsections below for complete descriptions):

6-1 Modify AcuoSemantixConfig.xml

The AcuoSemantixConfig.xml file is located at *C:\Program Files (x86)\Acuo Technologies\AcuoSemantix*. This file is used to specify where AcuoSemantix will send update and merge messages (Acuo Fixits), along with other configuration options used by AcuoSemantix related to message processing and error handling. The AcuoSemantix Service needs to be restarted if any changes are made to this file. See Figure 6-1 below for a screenshot showing a sample AcuoSemantixConfig.xml file. A description of all parameters and steps to edit this file follow.

NOTE: In versions previous to 5.3.1, the AcuoSemantixConfig.xml file was called ARPSConfig.xml. In 5.3.1, some of the existing parameters from ARPSConfig.xml have been renamed, and there are also some new parameters in 5.3.1 that did not exist previously. The ARPSConfig.xml file is no longer valid in 5.3.1, however some parameters may contain data that has not changed (for example, server names and Called AE names).

Parameters that have been renamed between 5.2.1 and 5.3.1 are noted below with the text “renamed in 5.3.1” (in parenthesis after the name of the parameter). Parameters that are new in 5.3.1 are noted with the text “new in 5.3.1”.

Figure 6-1: AcuoSemantixConfig.xml (Sample File)

```
<?xml version="1.0" encoding="UTF-8"?>
- <AcuoSemantixConfig Version="5.3.1">
        <!-- Message Identification Parameters -->
    <MsgTypeField1>//MSH//MSH_9_MessageType//CM_MSG_MessageType[1]</MsgTypeField1>
    <MsgTypeField2>//MSH//MSH_9_MessageType//CM_MSG_TriggerEvent[1]</MsgTypeField2>
    <SourcePath>//MSH//MSH_3_SendingApplication//HD_NamespaceId[1]</SourcePath>
        <!-- Fixit Parameters -->
    <HostName>localhost</HostName>
    <ListeningPort>4321</ListeningPort>
    <AETitle_AcuoMed>AcuoMed</AETitle_AcuoMed>
    <AETitle>AcuoSemantix</AETitle>
    <ImplementationUID>1.2.840.114158.1.4.1</ImplementationUID>
    <ImplementationName>AcuoSemantix531</ImplementationName>
    <UpdateDelayInMinutes/>
    <UseHisRisAsFilter>NO</UseHisRisAsFilter>
    <EnableFixitStudyStatus/>
    <EnableDefaultFixitForDomain>NO</EnableDefaultFixitForDomain>
  - <FixItDests>
      - <Dest>
            <IssuerPIDValue>1234</IssuerPIDValue>
            <HostName/>
            <Port>4321</Port>
            <SCPAETitle>AcuoMedFixit</SCPAETitle>
        </Dest>
      - <Dest>
            <IssuerPIDValue>9876</IssuerPIDValue>
            <HostName/>
            <Port>4321</Port>
            <SCPAETitle>AcuoMedFixit2</SCPAETitle>
        </Dest>
    </FixItDests>
        <!-- Batch Move (Prefetch) Parameters -->
    <PrefetchStationMapping>//PV1//PV1_3_AssignedPatientLocation//PL_FacilityHd//HD_NamespaceId[1]</PrefetchStationMapping>
    <AcuoBatchMoveServer>localhost</AcuoBatchMoveServer>
    <EnableBatchMoveDBFilter>YES</EnableBatchMoveDBFilter>
    <EnableBatchMoveStudyStatus/>
    <DisablePIDOnMove>NO</DisablePIDOnMove>
    <ExpediteBatchMoveServer/>
    <ExpediteBatchMoveDaysAhead>30</ExpediteBatchMoveDaysAhead>
    <ExpediteBatchMovePriority>4</ExpediteBatchMovePriority>
        <!-- Error Processing Parameters -->
    <SkipHL7MessagesWithErrors>YES</SkipHL7MessagesWithErrors>
        <!-- Miscellaneous Parameters -->
    <MasterDBServerName>localhost</MasterDBServerName>
    <HL7MessagePollingTimer>1</HL7MessagePollingTimer>
    <CleanUpDelayDays>2</CleanUpDelayDays>
    <EnableXMLFiles>NO</EnableXMLFiles>
    <TempFolderPath/>
</AcuoSemantixConfig>
```

Open the **AcuoSemantixConfig.xml** file in Notepad (or an xml editor) to edit it. The following is a description of all parameters in this file (reference Figure 6-1 above).

NOTE: Many of the parameters in the AcuoSemantixConfig.xml file correspond to information pertaining to Acuo Fixit messages sent from AcuoSemantix (see the first 10 parameters below). An Acuo "Fixit" message is a message sent from one Acuo system to another to keep modified patient and study data in sync across an enterprise solution. Fixit messages are most commonly generated in AcuoSemantix when there are changes to patient demographic information (ADT-A08, for example) or when 2 patients are merged (ADT-A18 or ADT-A40, for example). When a fixit message is generated by AcuoSemantix, a job is queued on the AcuoMed system inside the "Batch Patient Update Manager" queue (Batch Processing Managers node). For more information, please refer to the Batch Patient Update Manager section of the AcuoMed Installation and Operations Guide.

1. **MsgTypeField1:** The segment of the incoming message listing the message type (ORM, for example) being sent. The information in this field (along with MsgTypeField2) serves as the basis for AcuoSemantix message processing. The data in this field should not be changed.

2. **MsgTypeField2:** The segment of the incoming message listing the event type (O01, for example) being sent. The information in this field (along with MsgTypeField1) serves as the basis for AcuoSemantix message processing. The data in this field should not be changed.

NOTE:	The parameters "MsgTypeField1" and "MsgTypeField2" can vary by site and are generally determined and set during initial implementation.

3. **SourcePath:** The segment of the incoming message listing the sending application. The data in this field should not be changed.

4. **HostName:** The AcuoMed server name where fixits will be sent. Change this value to the AcuoMed server name where fixits will be sent.

5. **ListeningPort:** The port number on the AcuoMed system where fixits will be sent. The port number here, along with the Called AE Name in the next parameter (AETitle_AcuoMed) need to match what is configured on the AcuoMed system receiving fixits.

6. **AETitle_AcuoMed**: The Called AE Name on the AcuoMed system where fixits will be sent. The Called AE Name configured here, along with the Port Number from the previous setting (ListeningPort) should match those configured on the AcuoMed system. Change the value in this field to match a Called AE Name on the AcuoMed system.
    - At this point, you may wish to revert back to the AcuoMed system and edit an existing Called AE Name or set up a new one specifically for receiving fixits.

NOTE:	The above parameters "HostName", "ListeningPort" and "AETitle_AcuoMed" are generally considered the default location where fixits will be sent. Alternatively, fixits may be sent to other destinations if functionality in other parameters is enabled. See the "EnableDefaultFixitForDomain" and "FixItDests" parameters below.

7. **AETitle**: This is the Calling AE Name that will be used in the outbound association from AcuoSemantix to AcuoMed when fixits are sent. It is recommended that the default of "AcuoSemantix" remain unchanged.

8. **ImplementationUID**: This is the Implementation UID that will be used in the outbound association from AcuoSemantix to AcuoMed when fixits are sent. It is recommended that the default of "1.2.840.114158.1.4.1" remain unchanged.

9. **ImplementationName**: This is the Implementation Name that will be used in the outbound association from AcuoSemantix to AcuoMed when fixits are sent. It is recommended that the default of "AcuoSemantix531" remain unchanged.

NOTE:	As indicated above the parameters "AETitle", "ImplementationUID" and "ImplementationName" should generally remain unchanged from their default values. These fields have no functional ramification attached to them (unless External SCU Authorization is configured on the Called AE Name receiving fixits). The information in these fields would typically be visible in the AcuoMed Activity Log (the Calling AE Name) or a captured hex trace on the AcuoMed server receiving fixits. This information may be helpful in troubleshooting situations by identifying the source of incoming data.

10. **UpdateDelayInMinutes**: This is the amount of time, in minutes, that fixits jobs queued from AcuoSemantix are delayed from running. The default behavior (when no value is set) is to run fixit jobs immediately.
    - In the Batch Patient Update Manager, any jobs that have a delayed time due to this parameter (UpdateDelayInMinutes) can be associated with the column "UTC Created Date". The "UTC Created Date" should generally be the queued time plus the number of minutes configured in this parameter. The "Queued Time" column will list the time the job was queued.

11. **UseHisRisAsFilter**: This is set to either "YES" or "NO". This setting allows Patient Update and Study Update fixit messages to be filtered (suppressed from being sent) if data in the Acuo His/Ris tables matches data in an inbound HL7 message for the same patient.
    - If set to "NO", fixits should be generated for all messages (if the activity is set in the ActivityList.xml file).
        - If "UpdatePatient" is configured in the ActivityList.xml file for a message, a Patient Level Update fixit will be generated.
        - If "UpdateStudy" is configured in the ActivityList.xml file for a message, a Study Level Update fixit will be generated.
        - If "PatientMerge" is configured in the ActivityList.xml file for a merge message, a Patient Level Merge fixit will be generated.
    - If set to "YES", AcuoSemantix looks at the Dest tags as configured in either the PatientUpdate.xml or StudyUpdate.xml file. If there is a difference in 1 or more of these configured Dest tags between the inbound HL7 message and the data in the His/Ris tables, a fixit is generated. If all are the same, no fixit will be generated. Further details are as follows:
        - If "UpdatePatient" is configured in the ActivityList.xml file for a message, the "PatientUpdate.xml" file will generally include the Dest Tags Patient Name, Birth Date, and Patient Sex. If there are no differences in these tags between the HL7 message and the data in the His/Ris Patient table (T_HISRISPATIENTINFO_HRP), a fixit will NOT be queued. If there is a difference in 1 or more of the above tags (the configured Dest tags), a fixit will be queued.
        - If "UpdateStudy" is configured in the ActivityList.xml file for a message, the "StudyUpdate.xml" file, for example, may be configured with the Dest Tags Study Description and/or Referring Physician. If there are no differences in these tags between the HL7 message and the data in the His/Ris Event table (T_HISRISEVENTINFO_RIS), a fixit will NOT be queued. If there is a difference in 1 or more of the above tags (the configured Dest Tags), a fixit will be queued.
    - This setting does NOT apply for the "PatientMerge" activity. A Patient Level Merge fixit will always be generated if the "PatientMerge" activity is configured inside a merge message.
    - This setting should apply for any message type, however only if the "UpdatePatient" or "UpdateStudy" activity is configured in the "ActivityList.xml" file.
    - If a message is logged in error, the UseHisRisAsFilter option becomes disabled and does NOT take effect for all subsequent retries of the message.
    - If a new message is received and nothing exists in the His/Ris Patient table, a fixit will be generated.

12. **EnableFixitStudyStatus (renamed in 5.3.1; formerly "ProcessOnORMStudyStatus")**: If configured, AcuoSemantix will only queue a fixit for an Order Message (ORM-O01) if there is a match between the value configured in the parameter and the value from the incoming HL7 message that is mapped to the Dicom Study Status ID tag (0032, 000a) in the HL7TagMap.xml file.
    - Example of excerpt from HL7TagMap.xml file (for the ORMO01 message):
        - <TAGPAIR>
            - <HL7PATH**>//ORC//ORC_1_OrderControl**</HL7PATH>
            - <DICOMTAG>0032,000A</DICOMTAG>
            - <REQUIRED>NO</REQUIRED>
            - <NEWTAGNAME>**ORC_1_OrderControl**</NEWTAGNAME>
            - <OCCURRENCE>1</OCCURRENCE>
        - </TAGPAIR>
    - Using the HL7TagMap.xml example file above:
        - If a value is configured in the "EnableFixitStudyStatus" parameter, the same value must also be found in the following segment of the incoming HL7 message in order for a fixit message to be queued: **//ORC//ORC_1_OrderControl**
    - If no value is configured in this parameter, this functionality should NOT take effect (this is the default).
    - This value is NOT case sensitive.
    - This parameter affects both Patient Update and Study Update fixit messages.
        - If this setting is enabled and there is NOT a match, neither fixit message will be queued.

- If this setting is enabled and there is a match, both a Patient Update and Study Update fixit will be generated (assuming UpdatePatient and UpdateStudy are configured in the ActivityList.xml file for an ORM message).

13. **EnableDefaultFixitForDomain; FixItDests (new in 5.3.1 HF1):** These parameters are new in the AcuoSemantix 5.3.1 Hotfix 1 release. They enable functionality for sending fixit message to different AcuoMed destinations (Server, Port, Called AE Name) based on data in the inbound HL7 message. The source data from the inbound HL7 message that is used to determine where to send the fixit is the field mapped to the Issuer of Patient ID tag (0010, 0021) in the HL7TagMap.xml file. See below for a description of each parameter.
    - **EnableDefaultFixitForDomain:** This can be set to either YES or NO. It will default to NO if nothing is entered.
        - If set to NO, and there is NO MATCH to Issuer of PID for any configured Dest, a fixit will NOT be sent anywhere and the message will not be processed. In addition, a Warning event will be output indicating the message was not processed.
        - If set to YES, and there is NO MATCH to Issuer of PID for any configured Dest, a fixit will be sent to the "default" fixit parameters (the parameters above → HostName, ListeningPort, AETitle_AcuoMed).
        - Note that 1 or more Dests (see below) must be configured with a Host Name in order for this parameter to take effect.
    - **FixItDests:** This node contains 1 or more Dests (see description of next parameter).
    - **Dest:** Each "Dest" allows a different "Issuer Of PID" value to be defined, and parameters for defining where the fixit is to be sent (Host Name, Port, Called AE Name) if there is a match between the configured value and the value from the HL7 message. Each Dest contains the sub-nodes below:
        - **IssuerPIDValue:** Actual value from the HL7 message that is used to determine if a fixit will be sent to this destination. If there a match between the value configured here and the value from the inbound HL7 message (that is mapped to the Issuer of Patient ID tag in the HL7TagMap.xml file), a fixit will be sent to the HostName/Port/SCPAETitle for that destination. Each configured "Dest" should have a different IssuerPIDValue configured.
        - **HostName:** Server name where the fixit will be sent if there is a match. Clearing out the HostName for all Dests effectively disables this functionality (and the "EnableDefaultFixitForDomain" setting above).
        - **Port:** Port where fixit will be sent if there is a match.
        - **SCPAETitle:** Called AE Name where fixit will be sent if there is a match.
    - To set up multiple destinations based on different expected Issuer of PID values, the base node (Dest) and all subnodes can be copied, and values in the subnodes can be changed accordingly (the parent node "Dest" remains the same). The following is an example of a configuration with 2 destinations:
        - **<FixItDests>**
            - ***<Dest>***
                - ***<IssuerPIDValue>1234</IssuerPIDValue>***
                - ***<HostName>Server1</HostName>***
                - ***<Port>4321</Port>***
                - ***<SCPAETitle>AcuoMedFixit1</SCPAETitle>***
            - ***</Dest>***
            - ***<Dest>***
                - ***<IssuerPIDValue>5678</IssuerPIDValue>***
                - ***<HostName>Server2</HostName>***
                - ***<Port>4321</Port>***
                - ***<SCPAETitle>AcuoMedFixit2</SCPAETitle>***
            - ***</Dest>***
        - **</FixItDests>**

- If the Issuer of Patient ID tag in the HL7TagMap.xml file is mapped correctly, and this data is present in the incoming HL7 message, it will be inserted into the "HRP_ISSUEROFPATIENTID" column of the "T_HISRISPATIENTINFO_HRP" table (the HisRis Patient table).

NOTE: The "Issuer of PID" is the identifier of the Assigning Authority (system, organization, agency, or department) that issued the Patient ID. The standard location in an HL7 message for Issuer of Patient ID is PID-3-4 (Segment PID, Field 3, Component 4; HL7 Version 2). The DICOM equivalent tag is "Issuer of Patient ID" (0010, 0021).

14. **PrefetchStationMapping (renamed in 5.3.1; formerly "DestPath"):** The segment of the incoming message listing the location of the patient or the location where the exam will occur. The data found in this segment can be used to trigger a Batch Move job if it matches the Station AE Title of a prefetch rule configured on the AcuoMed server. If no match occurs, the default prefetch rule of "esdefault" will be used. The default value in this field may be changed to a different segment path if Batch Moves need to be triggered from some other segment.
    - The default message segment for the **PrefetchStationMapping** setting is: //PV1_3_AssignedPatientLocation[1]//PL_FacilityHd//HD_NamespaceId

15. **AcuoBatchMoveServer (renamed in 5.3.1; formerly "WhereToTableBatchMoveJob"):** The name of the server where the Batch Move job will be queued. This is the AcuoMed system where the default prefetch rule of "esdefault" is required to be present. Optionally, other prefetch rules could be set up to drive Batch Moves based on the Assigned Patient Location of the incoming HL7 message (see the "PrefetchStationMapping" parameter above).

16. **EnableBatchMoveDBFilter (new in 5.3.1):** This parameter should be set to "YES" or "NO". If no value is entered, it will default to "YES". This is the same default behavior for releases prior to 5.3.1.
    - If set to YES, the a Batch Move job will only be queued if the PID does NOT already exist in the Batch Move table. If the PID already exists, a Bath Move will NOT be queued (the general assumption is that it is the same patient).
    - If set to NO, a Batch Move will be queued for every message unless the "EnableBatchMoveStudyStatus" is enabled. The "EnableBatchMoveStudyStatus" parameter may effectively override this setting and potentially prevent a Batch Move job from being queued for an ORM-O01 message. See next parameter below.

17. **EnableBatchMoveStudyStatus**: If a value is configured in this parameter and an order message (ORM-O01) is received, a batch move will only be queued if the value in the ORC-1 (Order Control) segment matches the value configured here. If no match occurs, no Batch Move will be queued. To turn this functionality off, delete the value in this parameter.
    - This setting only takes effect if "SendBatchMove" is configured in the "ActivityList.xml" file for 1 or more message types.
    - Example: The value "NW" may be present in the ORC-1 segment to indicate it is a new order. If "NW" is configured for this parameter in the configuration file, batch moves will only be queued if there is a match (if a new order is received). Subsequent ORM messages with a different order status will NOT generate an additional Batch Move job.

18. **DisablePIDOnMove**: Controls whether a Batch Move job queued from AcuoSemantix uses PID or Patient Name as the move criteria.
    - If set to "NO", Batch Moves will be queued using Patient ID (PID) as the move criteria. A wildcard character (*) will be used for Patient Name. This is the default.
    - If set to "YES", the Patient Name will be used as the move criteria, and a wildcard will be used for PID. If set to "YES" the components used for the Patient Name are last name and first initial of the first name.
    - This setting only takes effect if "SendBatchMove" is configured in the "ActivityList.xml" file for 1 or more message types.

19. **ExpediteBatchMoveServer; ExpediteBatchMoveDaysAhead; ExpediteBatchMovePriority:**
    - These 3 parameters work in conjunction with one another. These control functionality that will automatically expedite the run time of an existing Batch Move job if an HL7 message is received that generates a Batch Move for the same patient. If a Batch Move job is already present on the "target" server, and an HL7 message is received that generates a move for the same patient, the "Next Run Time" will be modified to 1 year back from the current date, and the "Priority" will be changed according to a parameter in the config file (generally to Expedited priority).
    - The following is a description of all 3 parameters:
        - ExpediteBatchMoveServer
            - This is the target server name where existing Batch Move jobs can be expedited.
            - Clearing out the value in this parameter (to NULL) will effectively disable the Expedite Batch Move Functionality (this is the default). This will also disable the functionality related to the other "expedite" settings that follow.
        - ExpediteBatchMoveDaysAhead
            - If the "Next Run Time" of a Batch Move job is within today + the number days in this setting, the job will be expedited if the PID already exists.
                - Example: If today is 5-5-2011 and this parameter is set to 15, all Batch Move jobs with a "Next Run Time" of 5-20-2011 or earlier will be expedited (if the PID already exists).
        - ExpediteBatchMovePriority
            - If a Batch Move job is being expedited, this allows the "Priority" of the job to be changed according to the following (this should be seen in the Batch Move Manager queue):
                - 4 = Expedited
                - 3 = High
                - 2 = Medium
                - 1 = Low
    - Other notes on the "Expedite Batch Move" functionality:
        - In the "ActivityList.xml" file, the "SendBatchMove" activity must be configured for the message type where Batch Moves are being generated and/or expedited.
        - In the "AcuoSemantixConfig.xml" file:
            - The "AcuoBatchMoveServer" parameter must be configured with a valid (AcuoMed) server name (this field cannot be null).
            - If the "ExpediteBatchMoveServer" is invalid or unreachable, the "ARPS_RE_EVENT_PROCESSED" column of the T_ARPS_RIS_EVENTS table will be populated with the value 4096 (update/expedite Batch Move error). This message (with the 4096 error) should be automatically retried and thus should run successfully once a valid server is entered (alternatively the row in the T_ARPS_RIS_EVENTS table can be deleted to retry the message).
        - If the "AcuoBatchMoveServer" and "ExpediteBatchMoveServer" parameters have the same server configured, all NEW jobs will be expedited if their run times fall within the "ExpediteBatchMoveDaysAhead" parameter.
            - Note: For a newly queued job under this scenario, the resulting run time is equal to the Scheduled Study Date minus the # of days configured to prefetch ahead of time according to the "esdefault" prefetch rule.
            - Example: Current date is 5-5-2011. An HL7 message is received that generates a Batch Move, and the Scheduled Study Date is 5-23-2011. The "esdefault" prefetch rule is configured to schedule prefetch jobs 7 days prior → thus on 5-16-2011. If the "ExpediteBatchMoveDaysAhead" parameter is set to 15, any newly queued Batch Move job will run have its run time set to 1 year earlier (since 5-16 < 5-20).

20. **SkipHL7MessagesWithErrors (new in 5.3.1)**: This setting is related to message retry behavior for messages in error that are considered "retryable". The status of a message that has been processed (or failed processing) is logged in the "T_ARPS_RIS_EVENTS" table, "ARPS_RE_EVENT_PROCESSED" column of the AcuoSemantix database. The following are the general states/values that may be logged into this column:
    - ARPS_RE_EVENT_PROCESSED = 0
        - A value of 0 is set momentarily for all messages just before they are processed.
    - ARPS_RE_EVENT_PROCESSED = 1
        - A value of 1 indicates the message was processed successfully.
    - ARPS_RE_EVENT_PROCESSED >= 2 and <= 15
        - A value between 2 and 15 indicates a non-retryable error. If a message is logged with a non-retryable error, it will never be retried again on its own. If this message needs to be processed again (for example, to troubleshoot the problem with the message), a manual change to the database is needed (the entry with the non-retryable error). Please contact Acuo Technologies Support for further assistance.
        - The "**SkipHL7MessagesWithErrors"** parameter does NOT affect non-retryable errors. This setting is related only to retryable errors (see next item below).
    - ARPS_RE_EVENT_PROCESSED >= 16
        - A value equal to or greater than 16 indicates a retryable error. Messages logged with these errors will generally be retried on their own periodically, however the behavior is affected by the parameter "**SkipHL7MessagesWithErrors".**
            - If set to "YES", retryable messages in error will be skipped and retried automatically. This is the recommended setting for all current versions of AcuoSemantix.
            - If set to "NO", and a message is logged as a retryable error, processing of all subsequent messages is halted until the error is resolved. The same message will retry automatically on its own until it is successfully processed. All other subsequent messages received after the errored message will not be processed until the errored message is processed successfully. In cases where the errored message continues to fail after repeated retry attempts, a manual change to the database may be needed to allow processing to continue and/or troubleshoot the message in error (please contact Acuo Technologies Support for assistance).

21. **MasterDBServerName:** This is the name of the AcuoMed server where the His/Ris Patient and Event tables are updated with patient/study information (depending on the type of HL7 message received). This is also the AcuoMed server where a His/Ris feature key must be present (previously mentioned above in the "AcuoMed/AcuoStore System Pre-Requisites" section above).

NOTE:	In basic environments the "MasterDBServerName" is typically the central long term archive, but in more complex environments multiple locations may exist in handling multiple RIS sources.

22. **HL7MessagePollingTimer (renamed in 5.3.1; formerly "RetryAcuoMedTimer")**: This is the amount of time AcuoSemantix checks for new messages that have been received and need processing (messages that have been inserted into the T_ARPS_HL7_TO_XML_REPRESENTATION table but not yet processed by AcuoSemantix). This is also the interval in seconds AcuoSemantix will retry a message in error if the AcuoMed service is down, if the His/Ris is not configured on the AcuoMed server, or the default prefetch rule of "esdefault" is not present on the AcuoMed server.
    - The default value for the **HL7MessagePollingTimer** setting is 1 second. It is recommended that the default value of 1 remain unchanged.

NOTE:	If the *HL7MessagePollingTimer* is set to something greater than the default of 1 (second), there may be noticeable delays in message processing since this is the interval that AcuoSemantix checks for new messages.

23. **CleanUpDelayDays:** This is the number of days that must expire before messages are deleted from the T_ARPS_HL7_TO_XML_REPRESENTATION and T_ARPS_RIS_EVENTS tables in the AcuoSemantix database. The

current system date is compared to the Acuo Insert Date of the events, and deletes events from both tables if the difference exceeds the number configured in this setting. The CleanUpDelayDays process runs once every time the AcuoSemantix Service is started (or restarted), then once every day thereafter at that same time.

- This value should be determined and set during site implementation (dependent upon how long messages need to be kept in the database).

24. **EnableXMLFiles (new in 5.3.1):** This parameter can be used to enable writing of XML files to the configured Temp directory (see TempFolderPath parameter below) for the purposes of troubleshooting and/or viewing a snapshot of internal files at the time a single message is being processed. This parameter should be set to "YES" or "NO".
    - If set to NO, XML files will NOT be written to the Temp directory. If no value is entered, it will default to NO. This is the same default behavior for releases prior to 5.3.1. It is recommended this setting remain unchanged from the default of "NO" during normal operation.
    - If set to YES, a set of XML files (approximately 6 files) will be written and saved into the directory configured in the TempFolderPath parameter (see description of this parameter below). The directory only contains a set of XML files for the single most recent message that has been processed. Each time a subsequent message is processed, the XML files are overwritten with those from the most recent message (therefore, files should NOT accumulate in this directory).

25. **TempFolderPath (new in 5.3.1):** This is the location of the directory that AcuoSemantix uses to temporary write fixit messages. Files are temporarily written here for fixit processing, then immediately deleted.
    - If no value is listed, the default is to use the "Temp" subfolder in the directory where AcuoSemantix is installed. This is also the same behavior as in previous releases, however in previous releases the directory could not be changed. For example, the following directory is used by default on a 64 bit system:
        - C:\Program Files (x86)\Acuo Technologies\AcuoSemantix\Temp
    - The "Temp" sub-folder is created upon startup inside the directory configured in this parameter.
    - No files should accumulate or be found in this directory. Any orphan files that do get left here unintentionally will get deleted automatically when the AcuoSemantix service is started (or restarted).
    - The AcuoSemantix service should be restarted after making a change to this parameter.

6-2 Modify ActivityList.xml

The ActivityList.xml file is located at *C:\Program Files (x86)\Acuo Technologies\AcuoSemantix*. This file is used to specify what activities or actions will be performed for each HL7 message type that is received. Changes to this file should not require a restart of the AcuoSemantix Service. See figure 6-2 below for a screenshot showing a sample ActivityList.xml file (notes on how this file can be edited follow below).

Figure 6-2: ActivityList.xml (Sample File)

```
<?xml version="1.0" encoding="utf-8" ?>
- <ActivityList Version="5.3.1">
  - <MESSAGE name="ADTA01">
      <ACTIVITY>UpdateAcuoHISRIS</ACTIVITY>
      <ACTIVITY>SendBatchMove</ACTIVITY>
    </MESSAGE>
  - <MESSAGE name="ADTA08">
      <ACTIVITY>UpdateAcuoHISRIS</ACTIVITY>
      <ACTIVITY>UpdatePatient</ACTIVITY>
      <ACTIVITY>SendBatchMove</ACTIVITY>
    </MESSAGE>
  - <MESSAGE name="ADTA18">
      <ACTIVITY>UpdateAcuoHISRIS</ACTIVITY>
      <ACTIVITY>PatientMerge</ACTIVITY>
      <ACTIVITY>UpdatePatient</ACTIVITY>
      <ACTIVITY>SendBatchMove</ACTIVITY>
    </MESSAGE>
  - <MESSAGE name="ORMO01">
      <ACTIVITY>UpdateAcuoHISRIS</ACTIVITY>
      <ACTIVITY>UpdatePatient</ACTIVITY>
      <ACTIVITY>UpdateStudy</ACTIVITY>
      <ACTIVITY>SendBatchMove</ACTIVITY>
    </MESSAGE>
  - <MESSAGE name="Activity Examples">
      <ACTIVITY>UpdateAcuoHISRIS</ACTIVITY>
      <ACTIVITY>PatientMerge</ACTIVITY>
      <ACTIVITY>UpdatePatient</ACTIVITY>
      <ACTIVITY>UpdateStudy</ACTIVITY>
      <ACTIVITY>SendBatchMove</ACTIVITY>
    </MESSAGE>
  </ActivityList>
```

NOTE:	The ActivityList.xml file is generally set up during initial implementation. Any changes to this file should be made by Acuo Support personnel (changes made to this file may have significant workflow ramifications).

- Refer to Figure 6-2 above. Notes on editing the ActivityList.xml file (open in Notepad or an XML editor to modify):
  - New *message names* may be added, along with corresponding *activities* depending on the requirements determined from site assessment and implementation.
  - To add a new message name, copy the text from an existing message from the "<MESSAGE name…" all the way to the end tag "</MESSAGE" (including the activities in between), and paste it just after the end of another message. Change the text inside the quotes to the new message name, and add or remove any associated activities as needed.
  - The activities that can be configured for each message name are the following (add the activities as needed for each message name):

- **UpdateAcuoHISRIS**
  - This activity should always be listed first if present.
  - If this activity is configured, patient information will be logged into the His/Ris Patient table (T_HISRISPATIENTINFO_HRP) and event (order) information is logged into the His/Ris Event table (T_HISRISEVENTINFO_RIS). This information is logged to the AcuoMed Server (Database) found in the ***MasterDBServerName*** parameter (AcuoSemantixConfig.xml file)**.** The information logged may depend on the message type and contents received. Further details by message type:
    - ORM-O01 (Order) Messages: Information is logged into the His/Ris Patient AND His/Ris Event tables.
    - ADT Messages (for example, ADT-A08 and ADT-A18): Information is logged into the His/Ris Patient AND His/Ris Event tables, however the entry into the Event table is generally a "dummy" record that doesn't contain any relevant information (since ADT messages don't generally contain Study/Event information).

NOTE: If a patient is being reconciled from the Reconciliation Event Manager (REM) in AcuoMed, the records that will be returned during the His/Ris search are those with a patient AND event entry. In addition, the event entry must contain a valid Study Date (Scheduled Procedure Start Date). The "RIS_SCHEDPROCSTARTDATE" column in the table "T_HISRISEVENTINFO_RIS" cannot be NULL, and should contain a valid date. The mapping of this field from an HL7 message is normally configured during initial site implementation and testing.

The above functionality is effective in 5.3.1 HF1 (and beyond). In the base 5.3.1 release, a record was NOT inserted into the His/Ris Event table for ADT messages.

- **PatientMerge (new in 5.3.1)**
  - This activity will generate a Patient Level Merge (Fixit) Message on the AcuoMed server. Previously in 5.2.1, the UpdatePatient activity queued the merge fixit message. In 5.3.1, the PatientMerge activity queues the merge fixit, and the UpdatePatient activity only queues a Patient Update fixit.
  - This activity should be configured for ANY merge message type (e.g. ADT-A18, ADT-A34, ADT-A40, etc…).
  - The recommended order of activities for a merge message in 5.3.1 is PatientMerge, followed by UpdatePatient. For example, the listing of all activities for an ADT-A18 in 5.3.1 is as follows:
    - UpdateAcuoHISRIS (always first)
    - **PatientMerge (listed before UpdatePatient)**
    - **UpdatePatient (listed after PatientMerge)**
    - SendBatchMove (last, if needed)
  - The parameters in the AcuoSemantixConfig.xml file that affect Merge fixits are the following:
    - HostName, ListeningPort, AETitle_AcuoMed, AETitle, ImplementationUID, ImplementationName (where the fixits will go)
    - UpdateDelayInMinutes
    - EnableDefaultFixitForDomain, FixItDests
    - The "UseHisRisAsFilter" and "EnableFixitStudyStatus" parameters are **NOT** applicable for merge messages.

- **UpdatePatient**
  - This activity will generate a Patient Level Update (Fixit) Message on the AcuoMed server.
  - The other parameters in the AcuoSemantixConfig.xml file that affect Patient fixits are the following:
    - HostName, ListeningPort, AETitle_AcuoMed, AETitle, ImplementationUID, ImplementationName (where the fixits will go)
    - UpdateDelayInMinutes

- UseHisRisAsFilter
- EnableFixitStudyStatus
- EnableDefaultFixitForDomain, FixItDests

- The "UpdatePatient" activity should be listed after the "PatientMerge" activity.

- **UpdateStudy**
  - This activity will generate a Study Level Update (Fixit) Message on the AcuoMed server.
  - The parameters in the AcuoSemantixConfig.xml file that affect fixits are the same as Patient Level (see UpdatePatient above).

- **SendBatchMove**
  - This will queue a Batch Move job to the server specified in the "AcuoBatchMoveServer" parameter.
  - The other parameters in the AcuoSemantixConfig.xml file that affect Batch Moves are the following (see the description of these above):
    - PrefetchStationMapping
    - EnableBatchMoveDBFilter
    - EnableBatchMoveStudyStatus
    - DisablePIDOnMove
    - ExpediteBatchMoveServer, ExpediteBatchMoveDaysAhead, ExpediteBatchMovePriority
  - Note: Queuing Batch Moves is also commonly referred to as Prefetching.

6-3 Modify/Replace Other XML Files

Other XML and mapping files are present with the install of AcuoSemantix found at *C:\Program Files\Acuo Technologies (x86)\AcuoSemantix*. These may need to be modified and/or replaced accordingly to compensate for differences in the version of HL7 messages being received or varying differences in message components from each HL7 feed. Sorting through these differences is generally part of the site assessment and implementation process whereby a sampling of site messages is generated and analyzed by Acuo Technologies. Any modified files that are needed will be provided by Acuo when AcuoSemantix is configured and installed (after site assessment and implementation).

In 5.3.1, some XML files installed in the above AcuoSemantix directory are suffixed with "_Template" at the end of the file name. These are generally the XML files that may be site-specific and therefore require changes or different mappings from site to site. The "template" files are designated to help serve as a baseline showing general content format in these files, however they need to be modified accordingly.

- All files designated as "template" files need to be present in the AcuoSemantix directory in order for AcuoSemantix to function. They need to be renamed and saved without the "_Template" text, or files with the correct names need to be copied into the AcuoSemantix directory.
  - For example, the "HL7TagMap.xml" file needs to be present in the AcuoSemantix directory for AcuoSemantix to function properly (not the "HL7TagMap_Template.xml" file).

NOTE: After inserting the customized XML mapping files, the file "**DicomTagInit.xml**" must have write permissions in order for AcuoSemantix to function properly.

7. Corepoint Integration Engine System Pre-Requisites

The following steps should be performed to satisfy the pre-requisites for the system where Corepoint Integration Engine is installed:

On Windows 2003:

1. Install Microsoft Message Queuing (MSMQ). MSMQ is required for Corepoint Integration Engine, however it is NOT installed as part of the default Windows installation. Perform the following steps to install MSMQ:
    a. Go to the Control Panel, Add or Remove Programs.
    b. Click Add/Remove Windows Components in the left pane.
    c. In the Windows Components Wizard, check the box for ***Application Server***, then click "Details…".
    d. In the Application Server components windows, check the box for ***Message Queuing***, then click "Details…".
    e. Check the "Common" option in the Message Queuing components window (the other components are not needed). Click OK.
    f. Click OK on the Application Server window, then click "Next…" to proceed with the installation.
        - At this step you may be prompted to insert the Windows 2003 and Windows 2003 SP2 CD, or will need to browse to a directory where files have been extracted.

NOTE:	MSMQ is an optional component available with Windows that enables applications running at different times to communicate across heterogeneous networks and systems that may be temporarily offline. MSMQ ensures reliable delivery by placing messages that fail to reach their intended destination in a queue and then resending them once the destination is reachable. Message Queuing provides guaranteed message delivery, efficient routing, security, and priority-based messaging. Corepoint Integration Engine utilizes MSMQ as it receives messages from an HL7 source. To view the GUI component for the MSMQ available within Windows, navigate to the following location: Control Panel → Administrative Tools → Computer Management → Services and Applications (node) → Message Queuing (subnode).

On Windows 2008 or Windows 2008 R2:

1. Steps to perform on Windows 2008 or 2008 R2:
    a. Go to the Control Panel, Programs and Features (or just Programs on Windows 2008 R2).
    b. Click the link "Turn Windows features on or off".
    c. In the "Features Summary" section, click the link "Add Features".
    d. Check the box for "Message Queuing" (the boxes underneath this option titled "Message Queuing Services" and "Message Queuing Server" are automatically selected). All other boxes under Message Queuing can remain unchecked.
    e. Click "Next" then "Install" on the following screen to proceed with the installation of MSMQ.

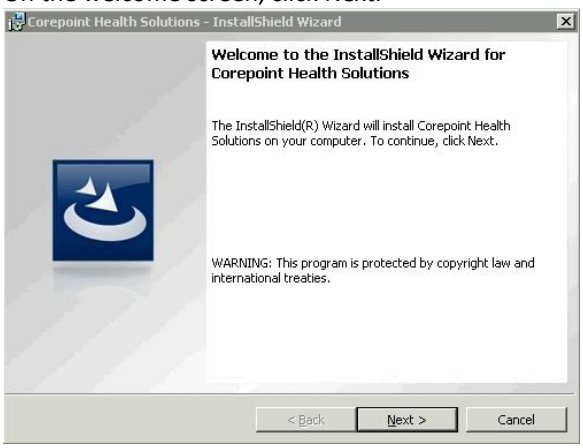
8. Install Corepoint Integration Engine

Corepoint Integration Engine should be installed on the same machine where AcuoSemantix is installed.

8-1 New Installations of Corepoint Integration Engine

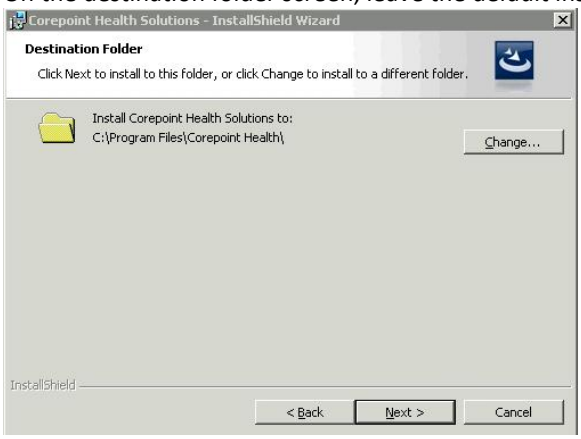
NOTE:	Please see the "Corepoint Integration Engine System Prerequisites" section above before installing Corepoint. If MSMQ is not installed, a pop-up message may appear and indicate MSMQ is required in order for the Corepoint Integration Engine Service to start.

a. Contact Acuo Technologies to determine the most recently supported/tested version of Corepoint Integration Engine.
b. Double click the exe to run the installer.
c. On the welcome screen, click Next.

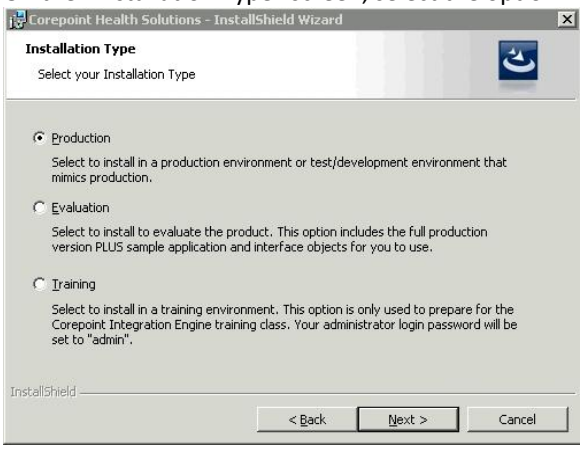


d. On the license agreement screen, select the option to accept the terms of the license agreement, then click Next.

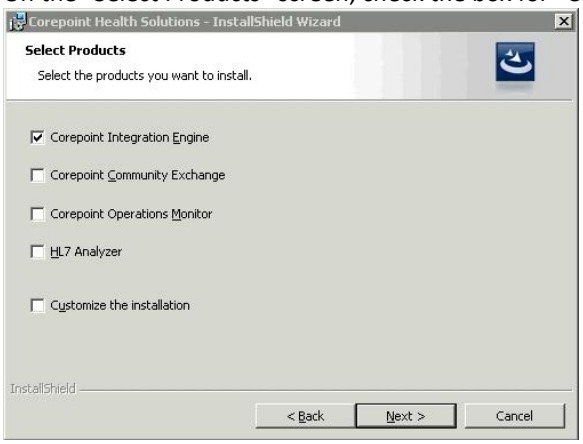
e. On the destination folder screen, leave the default install path intact and click Next.



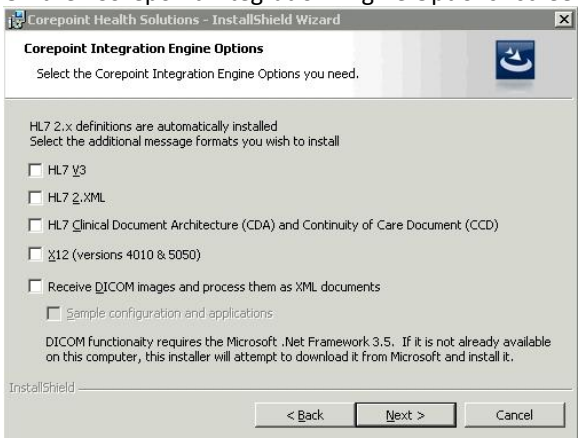
f. On the “Installation Type” screen, select the option “Production”.



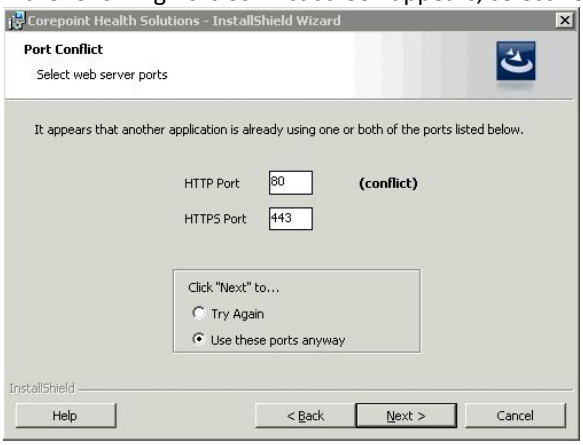
g. On the “Select Products” screen, check the box for “Corepoint Integration Engine”.



h. On the “Corepoint Integration Engine Options” screen, leave all options unchecked.

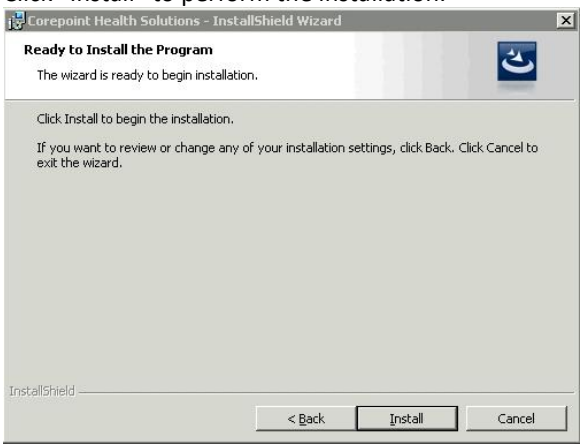


i. If the following Port Conflict screen appears, select “Use these ports anyway” then click Next.

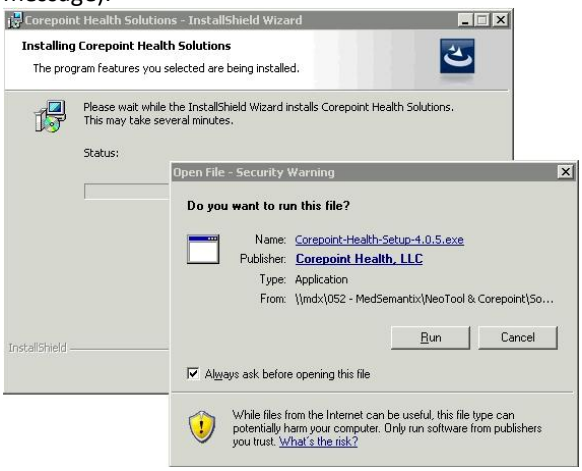


j. On the “Administrator Password” screen, enter a password for the Corepoint Integration Engine Administrator user. Remember or write down this password as it will be required again at a later stage when performing Administrator functions (configuration) inside Corepoint Integration Engine.

k. Click “Install” to perform the installation.

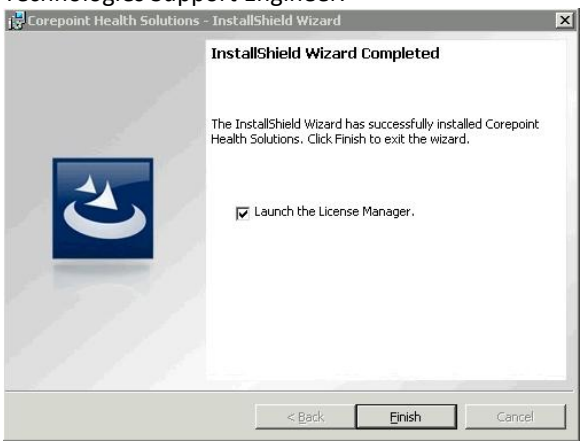


l. If the following pop-up screen appears, click Run to continue (see next item as well for another possible pop-up message).

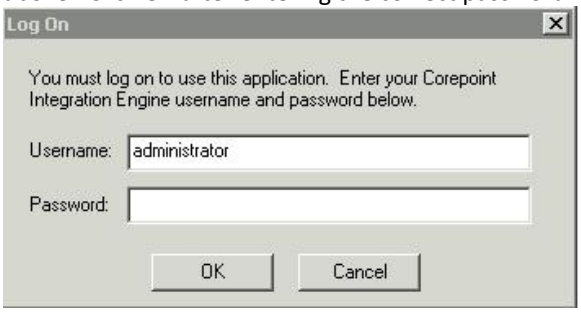


m. If a pop-up message is received indicating “The installation of Microsoft Visual C++ 2008 Redistributable Package (x86) appears to have failed. Do you want to continue the installation?", click "Yes" to continue (the installer should then complete successfully).

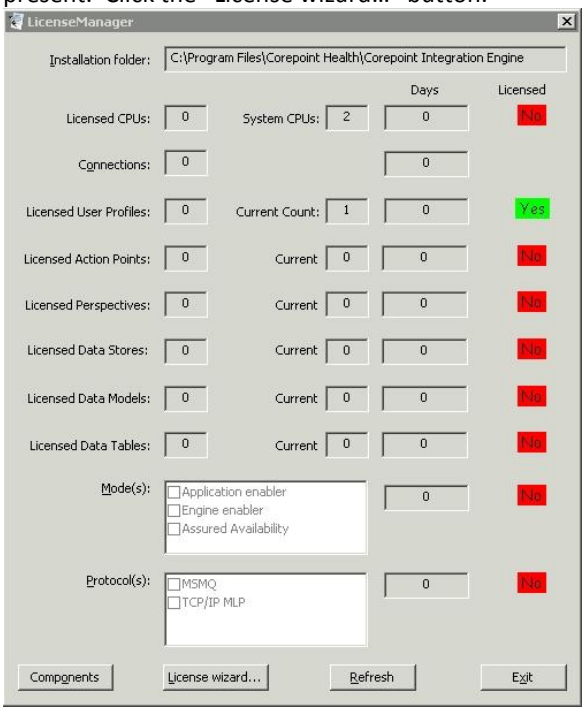
n. When the installation completes, leave the box checked to launch the license manager and click “Finish”. A 30-day demo license key should be temporarily obtained from Corepoint until a license key is provided by an Acuo Technologies Support Engineer.



o. When the license manager is launched, you will be prompted to first enter the Corepoint Integration Engine Administrator password. This is the password which was entered during the install of Corepoint Integration Engine above. Click OK after entering the correct password.



p. After entering the password the License Manager screen should appear, which generally indicates no license key is present. Click the “License wizard…” button.



q. On the License Wizard welcome screen, click Next.

r. Select the option to get an evaluation key through an internet connection. Follow through remaining steps to get an evaluation key. You may need to go to the Corepoint website to create a new login/password during this process. Please contact Acuo Technologies Support if any assistance is needed.

s. When complete, a message should appear indicating a demo key was successfully obtained. Click Finish to close the license wizard.

NOTE:	After an evaluation/demo key is obtained, full functionality of Corepoint should be available for 30 days. During this time an Acuo Support/Implementation Engineer will go through the process of obtaining and applying a valid license key.

NOTE:	If an install of Corepoint Integration Engine is re-imaged or restored to different hardware, the Corepoint Integration Engine license file may be invalidated and a new license will be needed. The Corepoint Integration Engine license will be invalidated if any one of the following has changed: → MAC Address → Number of CPUs → Serial Number of the volume where Corepoint Integration Engine is installed (type "vol" at a command prompt to display this)

8-2 Upgrading Corepoint Integration Engine

Please contact Acuo Technologies Support before upgrading to a newer version of Corepoint Integration Engine. New versions of Corepoint Integration Engine are generally tested in conjunction with the Service Pack Level release of AcuoSemantix.

The following are the upgrade instructions:

1. Export the Receiver Connection and all objects to backup the Corepoint Integration Engine configuration.
    a. Launch the Corepoint Integration Engine Configuration panel through Start \ Programs \ Corepoint Health \ Corepoint Integration Engine \ Corepoint Integration Engine Configuration.
    b. On the right side of the screen where all of the objects are listed, right click on the Connection and select "Export…". Select the option to "Export This Connection", then click OK.
    c. Leave all objects checked and click OK. Enter the file name and directory to be saved, then click "Save".
2. Stop interface services from trading partners to Corepoint Integration Engine if possible.
3. Stop the Corepoint Integration Engine service.
4. Close all Corepoint Integration Engine GUI windows.
5. Stop all background software (antivirus, antispyware, etc…).
6. Uninstall Corepoint Integration Engine through Programs and Features (Add or Remove Programs).
7. Install the new version of Corepoint Integration Engine. On the install screen select the option for Corepoint Integration Engine only.
8. Check that the license file is still valid (navigate to the license manager under Start/Programs/Corepoint Health/Corepoint Integration Engine/Setup/License Manager).
9. Start the Corepoint Integration Engine service.
10. Re-start interface services from trading partners to Corepoint Integration Engine (if needed).
11. Test, monitor and validate functionality as necessary.
12. Restart background software (antivirus, antispyware, etc…).

9. Configure Corepoint Integration Engine

- There are 2 basic options to configure Corepoint Integration Engine (the steps for each are below):
  - Configure Corepoint Integration Engine by Importing an Existing Configuration
  - Configure Corepoint Integration Engine Manually (Not Recommended)

9-1 Configure Corepoint Integration Engine by Importing an Existing Configuration

This option requires a configuration to have been previously exported to a Corepoint Integration Engine Export (.nix) file. This is dependent upon a fixed configuration of all components when originally exported.

NOTE:	Importing an existing configuration is generally the preferred method for configuring Corepoint Integration Engine. Typically, the Acuo Implementation Team will perform an import using a standard base configuration, then apply tweaks to the configuration that are specific to each site.

a. Export a Configuration (Pre-Requisite to Importing)
   1) Importing an existing configuration first requires a configuration to have been previously exported. To export a configuration, launch the Corepoint Integration Engine Configuration panel through Start \ Programs \ Corepoint Health → Corepoint Integration Engine → Corepoint Integration Engine Configuration.
   2) On the right side of the screen where all of the objects are listed, right click on the Connection and select "Export…". Select the option to "Export This Connection", then click OK.
   3) Leave all objects checked and click OK. Enter the file name and directory to be saved, then click "Save".

b. Verify the Corepoint Integration Engine Service is Started (on the system where the import will occur)
   1) To check whether or not the Corepoint Integration Engine Service is started (and start it), one of the following 2 options can be used:
      i. From the Start Menu, navigate to Start \ Programs \ Corepoint Health → Corepoint Integration Engine → Legacy Tools → Monitor – Alerts and Status. Under the Corepoint Integration Engine Service node, check the "My Computer" node for whether or not the service is started (right click the My Computer node and select Start Service to start it).
      ii. Go to the system Control Panel / Administrative Tools / Services node and go to the Corepoint Integration Engine Service.

c. Import a Configuration
   1) Launch the Corepoint Integration Engine Configuration panel through Start \ Programs \ Corepoint Health → Corepoint Integration Engine → Corepoint Integration Engine Configuration.
   2) Select File → Import… at the top of the screen, select the previously exported Corepoint Integration Engine Export (.nix) file, then click the Open button.
   3) Leave all package components checked and click OK.

d. Modify the Server Name in the Data Point Configuration
   1) Go into the properties of the Data Point and edit the Server Name to the correct name of the server.
   2) This should be the only configuration component that needs to be changed.

e. Import any Derivative files into the appropriate HL7 version node.
   1) On the left side of the screen, expand the "/" and navigate to the correct HL7 version node.
   2) Select or highlight the node with the correct HL7 version, then go to the top-most line in the Corepoint Integration Engine window and select File → Import. Select the derivative file to import.

f. Edit/Verify the Receiver Connection Configuration
    1) Right click on the Receiver Connection and select “Edit…”.
    2) Inside the “Queuing and Inter-Queue Transformation” node, Transformation section, verify “Convert HL7 to XML” is selected.
    3) In the “Derivative” field, **select/highlight** the derivative file inside the appropriate HL7 version node. Be sure to select/highlight the derivative file subnode, not the HL7 version node (if a derivative file is being used).
    4) **Uncheck** the “Enforce Required Segments” and “Enforce Required Fields” fields.
    5) **Check** the “Ignore Unexpected Segments” and “Ignore Unexpected Fields” fields.
    6) Continue through all other screens by clicking Next, then click Finish at the end to save the Receiver Connection changes.

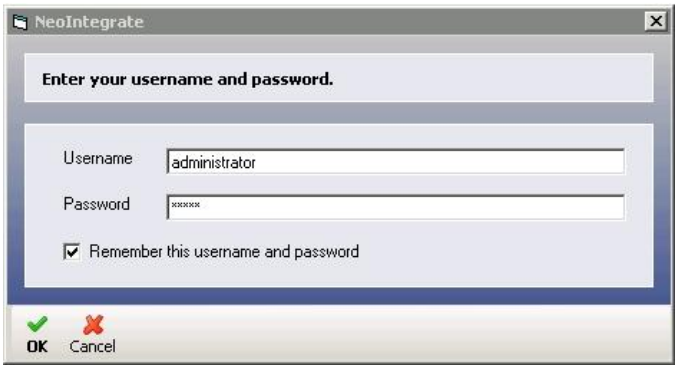
g. Restart the Corepoint Integration Engine Service
    1) Follow the steps above to stop and re-start the Corepoint Integration Engine Service.

9-2 Configure Corepoint Integration Engine Manually

This option involves configuring all components manually inside the Corepoint Integration Engine configuration panel, including the following: Data Point, Namespace, Database Association, Action List, Receiver Connection, and Subscription Pool.

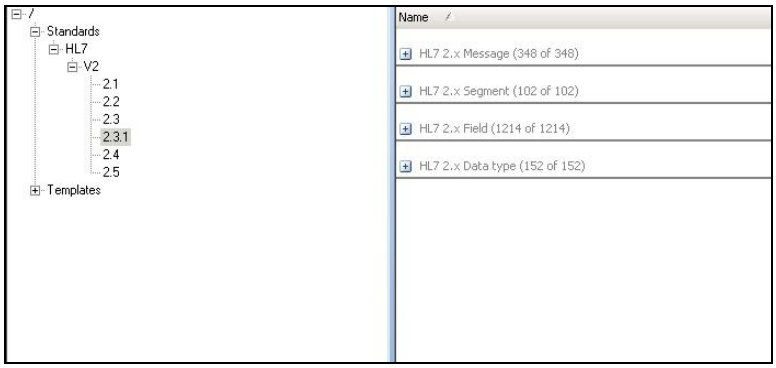
NOTE:	This method of configuring AcuoSemantix is generally not recommended, although it is listed here for reference if needed. Newer implementations on version 5.3.1 will generally import a base configuration (the previous configuration option) with common components where limited changes need to be made.

a. Launch the Corepoint Integration Engine Configuration by navigating from the Start Menu to Start \ Programs \ Corepoint Health → Corepoint Integration Engine → Corepoint Integration Engine Configuration.
    - The Corepoint Integration Engine user name and password will need to be entered to proceed. The user should be “administrator” and the password was entered during the install step above.



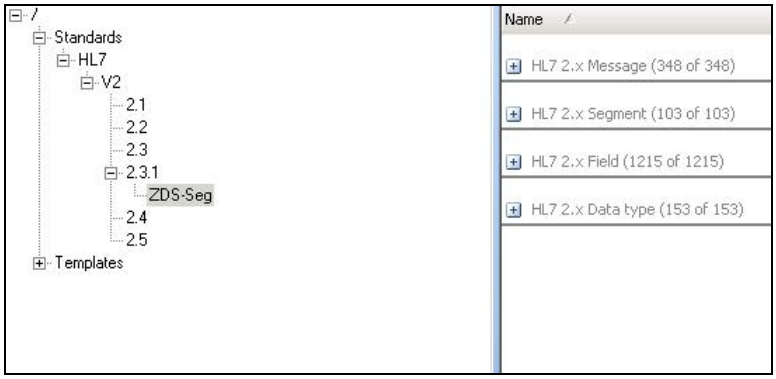
b. Import any derivative files under the appropriate HL7 version node in the configuration window. The following steps are an example on how to import a derivative file into the V2.3.1 node (when HL7 V2.3.1 messages are being received).

    1) On the left side of the screen, expand the “/” and navigate to Standards \ HL7 \ V2 \ 2.3.1. Select or highlight the 2.3.1 node.



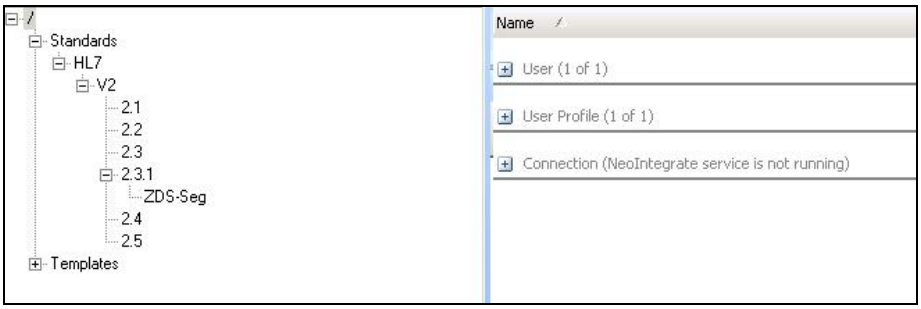
NOTE:	Any derivative files will typically be provided by an Acuo Support Engineer during site configuration.

2) Go to the top-most line in the Corepoint Integration Engine window and select File → Import. Select the derivative file to import then click "Open". After importing the derivative file, it should appear as a subnode underneath the applicable HL7 version node.



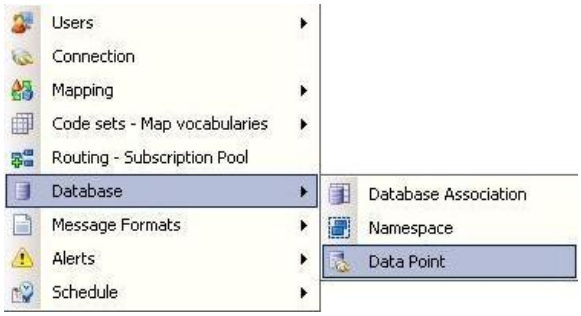
NOTE:	One type of derivative is called a Z Segment. Z segments contain clinical or patient data that the HL7 Standard may not have defined in other areas. Essentially, it is the "catch all" for data that does not fit into the HL7 Standard message definitions. Z segments can be inserted in any message at any time, and Z segments can carry any data you want. In HL7 messaging, all Z segments within it start with the letter "Z". Z segments are one of the reasons why the HL7 Standard is sometimes called the flexible standard. The HL7 Standard is a framework for negotiation, and Z segments are an area ripe for negotiation between healthcare vendors and systems. When using Z segments, it is important to have adequate documentation of what is included. The Z-Segment file imported in the above step defines the Study Instance UID Z segment used in an ORM-O01 message (Procedure Scheduled). It is a segment in the HL7 message that contains the defined study instance UID (length is 100, data type is DS).

c. On the left side of the screen, **double click** on the root level "/". This will allow the appropriate options to be present when configuring the items in next steps below. After double clicking the root level "/", the right hand side of the screen should be similar to the screenshot below.



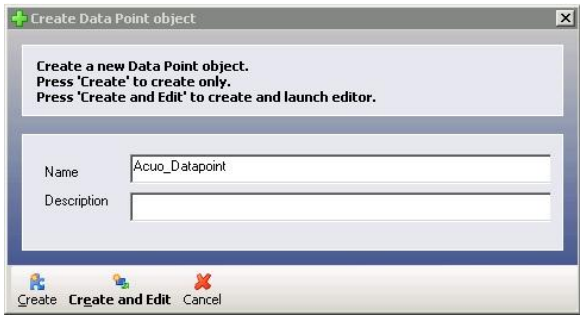
d. Set up a new **Data Point**.

1) Right click on the right side of the screen in the blank white space and select Database → Data Point.

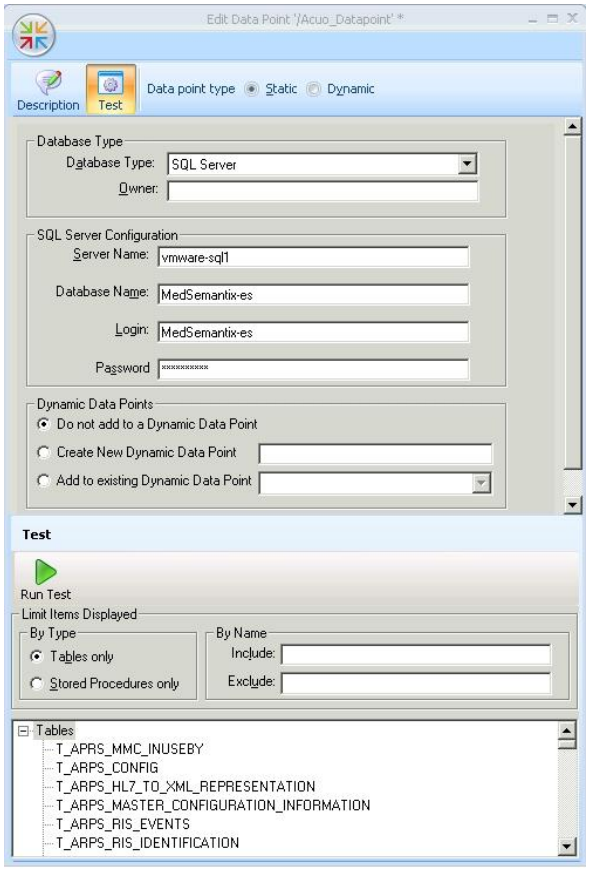


2) Name the Data Point "**Acuo_Datapoint**", then click the button "Create and Edit".

NOTE:	For this step and all steps below the format used for naming items will be "**Acuo_ItemType**". This naming format is only used for the purposes of this guide and may be changed.



3) For steps 4-13 below, refer to the following screenshot:



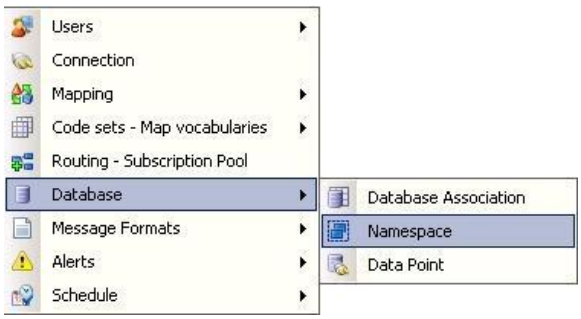
4) Data Point Type (at top of screen): Leave “Static” selected (this should be the default)
5) DB Type: SQL Server
6) Owner: Leave Blank
7) Server Name: Enter the ***SQL Server Instance Name***
8) Database Name: **AcuoSemantix**
9) Login: **AcuoSemantix**
10) Password: **Secure4321**

NOTE:	The Database Name, Login and Password fields are all created automatically when AcuoSemantix is installed. They are all fixed and should not be changed.

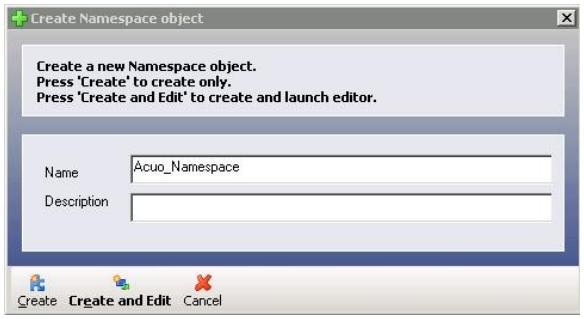
11) Leave the option selected for “Do not add to a Dynamic Data Point”.
12) Click the “Test” button at the top of the screen, then click the green arrow that indicates “Run Test”. If the DB connection is successful, all tables should be displayed at the bottom portion of the screen.
13) Click the File menu at the top left of the screen, and select “Save and Close”.

e. Set up a new **Namespace**.

1) Right click on the right side of the screen in the open white space and select Database → Namespace.



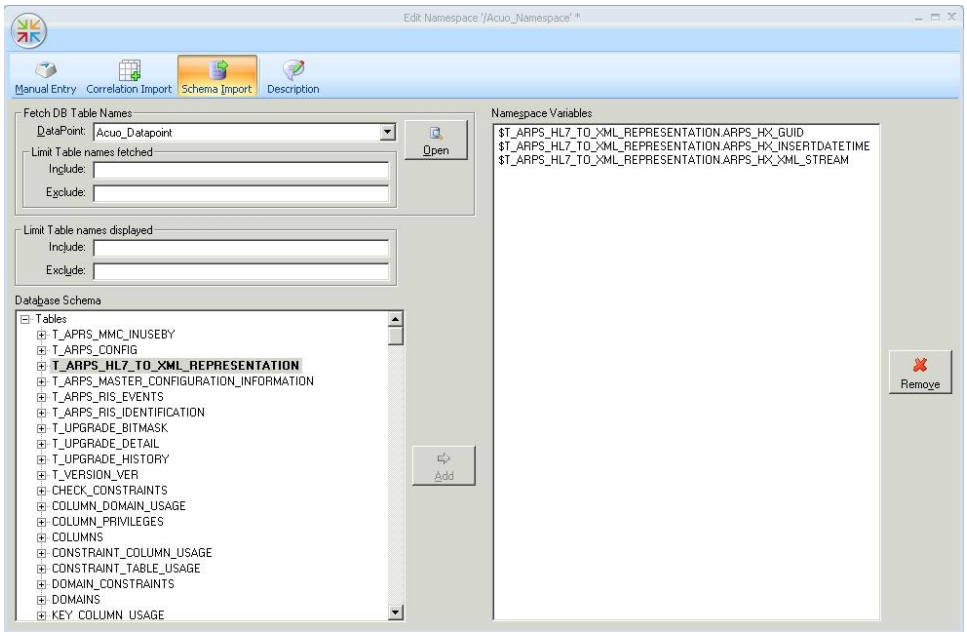
2) Name the Namespace "**Acuo_Namespace**", then click the button "Create and Edit". The screen below then appears.



3) Click the Schema Import button at the top of the screen, Select the Data Point created in the previous step, Click Open.

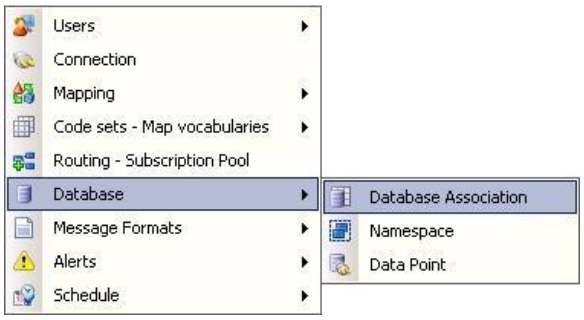
4) Select the table "T_ARPS_HL7_TO_XML_REPRESENTATION" and click Add. The Namespace Variables section should be populated with the 3 column names (prefaced with a $).

5) Click the File menu at the top left of the screen, and select "Save and Close" (see screenshot below for a snapshot of the Namespace screen before saving).

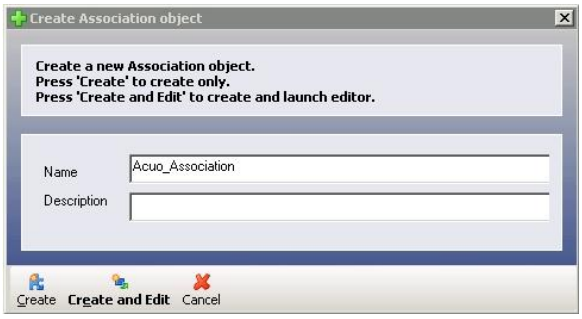


f. Set up a new **Database Association**.

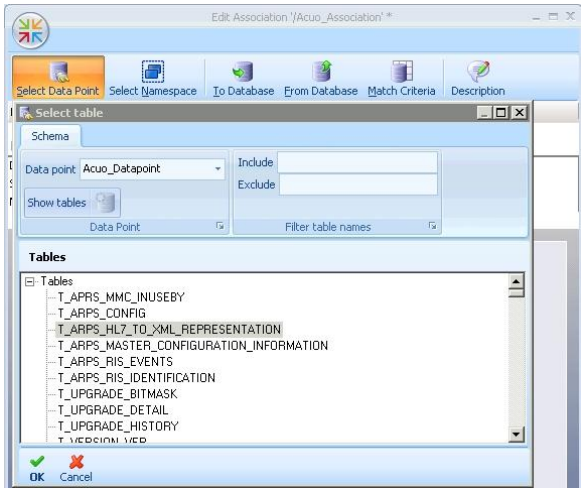
1) Right click on the right side of the screen and select Database → Database Association.



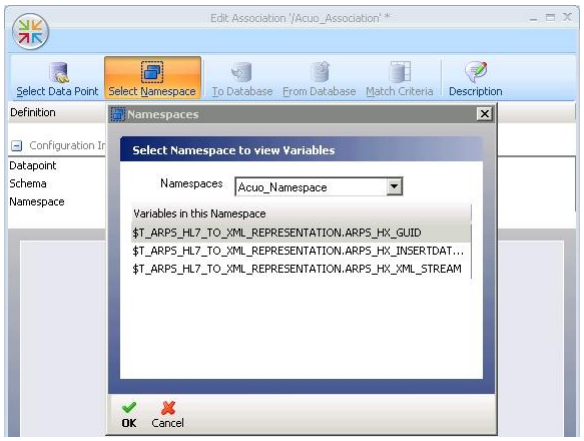
2) Name the Association "**Acuo_Association**", then click the button "Create and Edit".



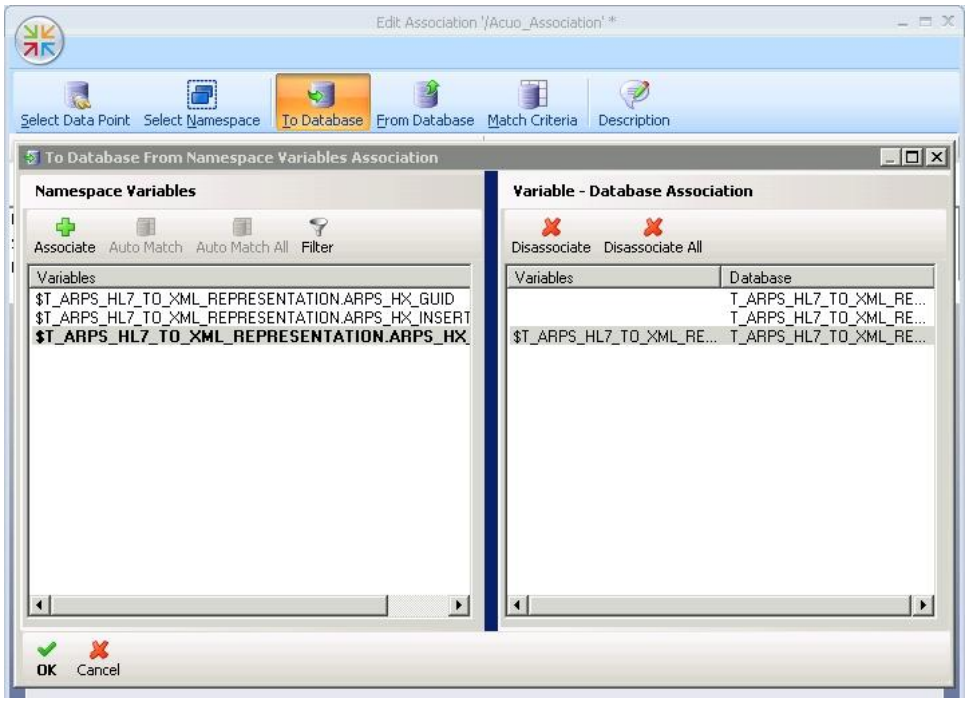
3) Click the "Select Data Point" button. In the Data Point field, select the Data Point created above if not already populated (it is usually already there). Click the "Show Tables" button. Highlight the "T_ARPS_HL7_TO_XML_REPRESENTATION" table and click OK.



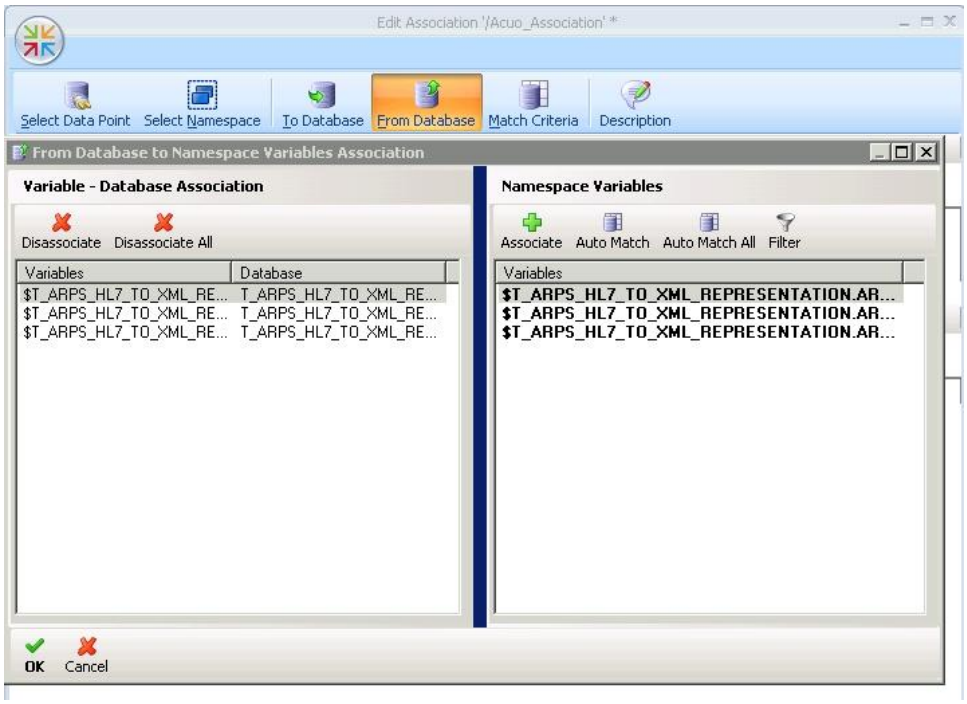
4) Click the "Select Namespace" button. In the Namespace field, make sure the Namespace created above is present (if not, select it). Click "OK" to add the Namespace.



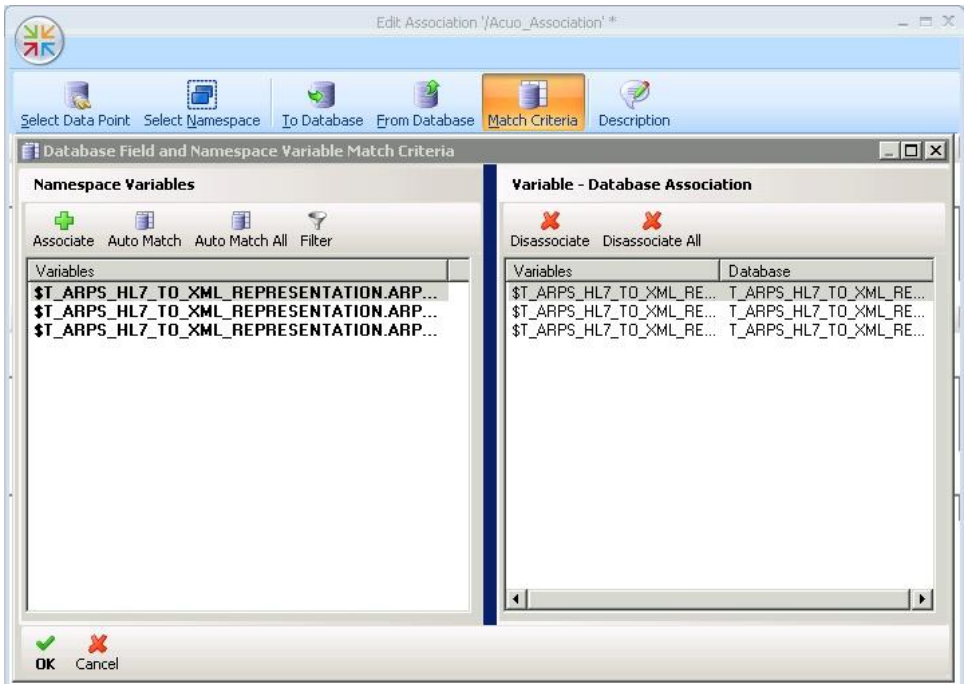
5) Click the "To Database" button. On the left hand side of the screen, click on the last row that ends in "…XML_STREAM" (it should become highlighted). Next, on the right hand side of the screen click on the last row that ends in "…XML_STREAM". Then click the Associate button on the left side of the screen. On the right side of the screen, only the 3rd row listed has an "association" present under the Variables column. Click "OK".



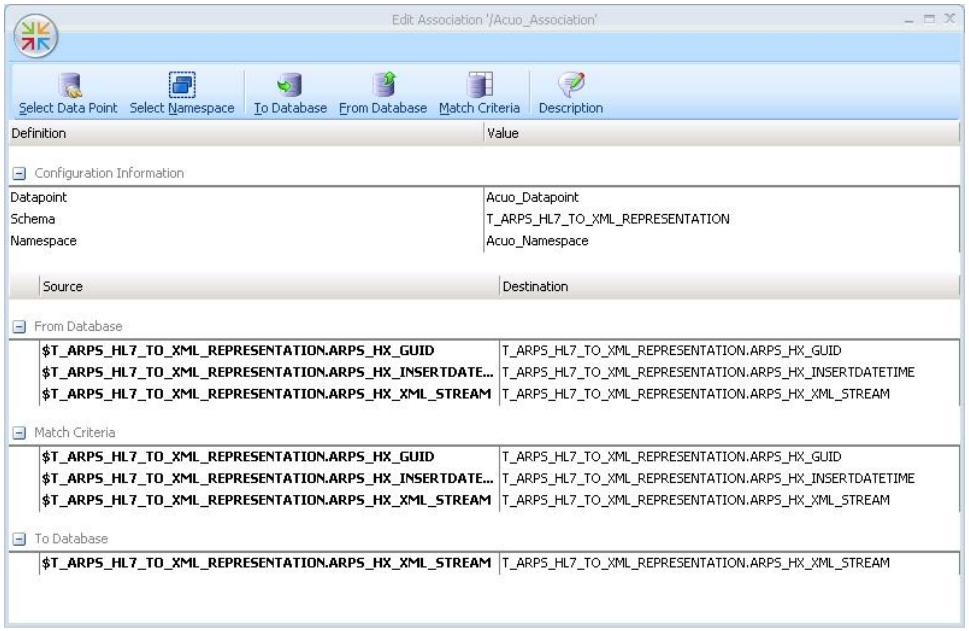
6) Click the "From Database" button. Click the "Auto Match All" button on the right side of the screen. Click "OK" to add the association.



7) Click the "Match Criteria" button. Click the "Auto Match All" button on the left side of the screen. Click "OK" to add the association.

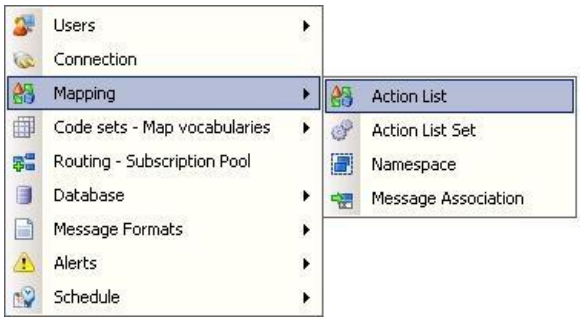


8) After completing all of the previous steps, the configuration for the Association should look like the screen below. Verify this looks correct, then click the File menu at the top left of the screen and select "Save and Close".

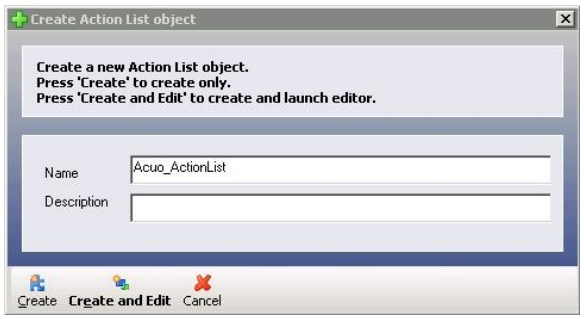


g. Set up a new **Action List**.

1) Right click on the right side of the screen and select Mapping → Action List.

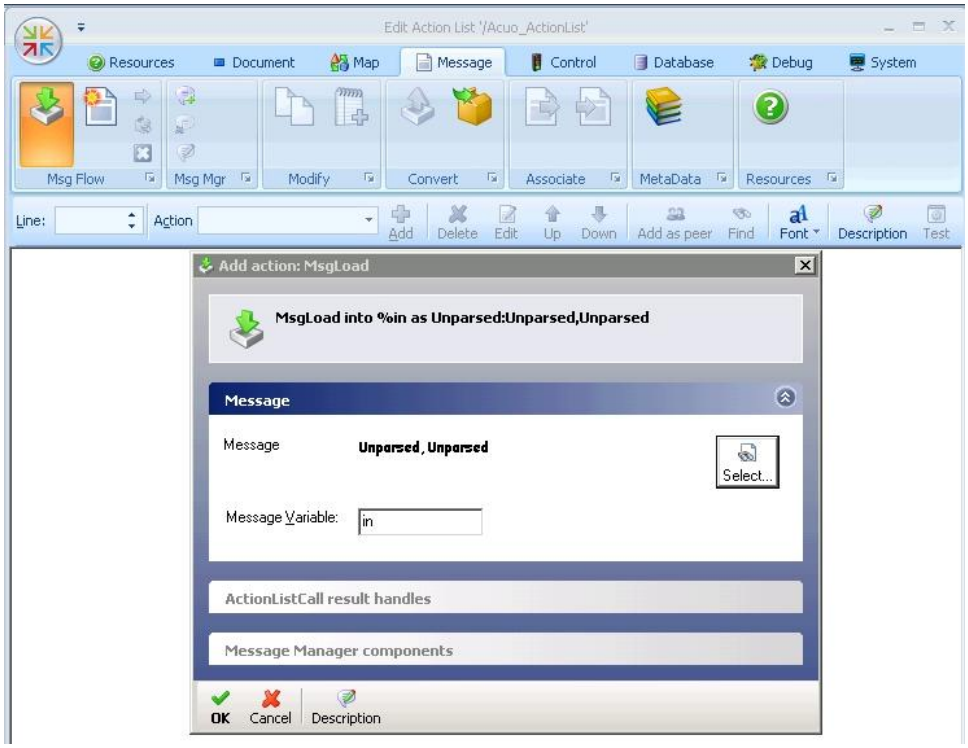


2) Name it "**Acuo_ActionList**", then click the button "Create and Edit".

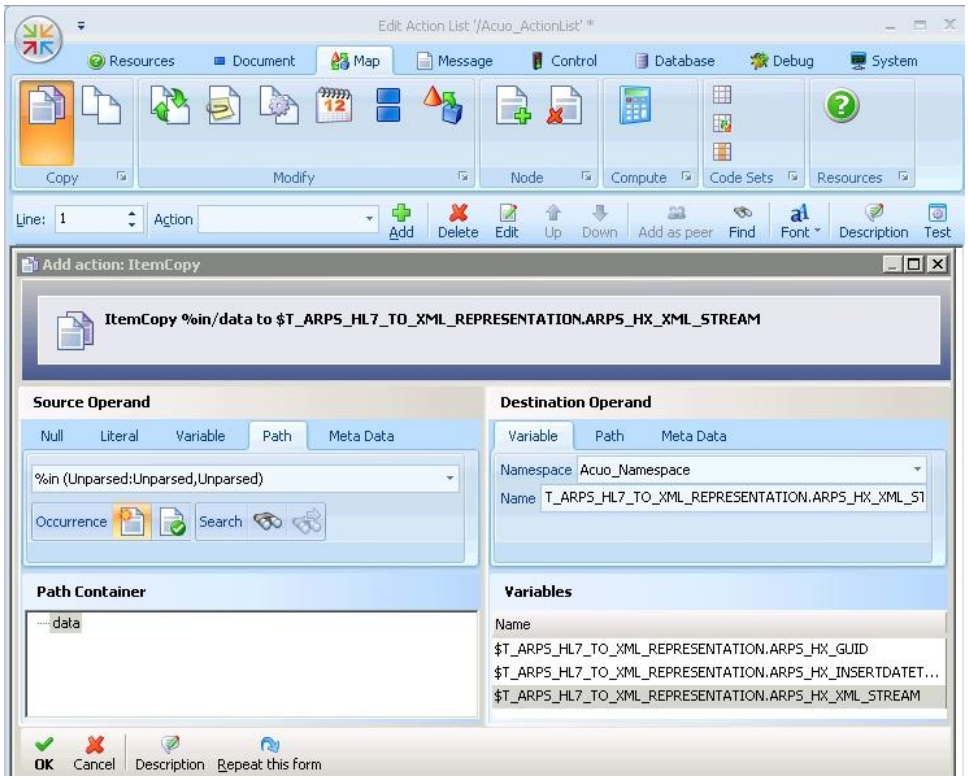


3) Click the "Message" tab at the top, then click the "MsgLoad" button (found at the far left side of the screen).

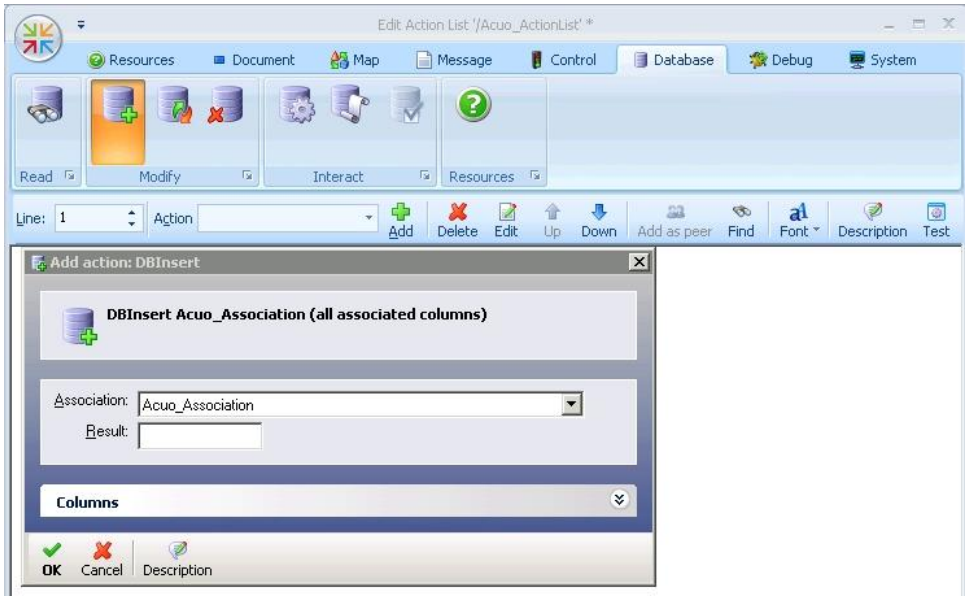
a. In the “Message Variable” field, enter the text “in”. Click “Select…” and change the Type to Unparsed. Click OK, then OK again to add the MsgLoad action.



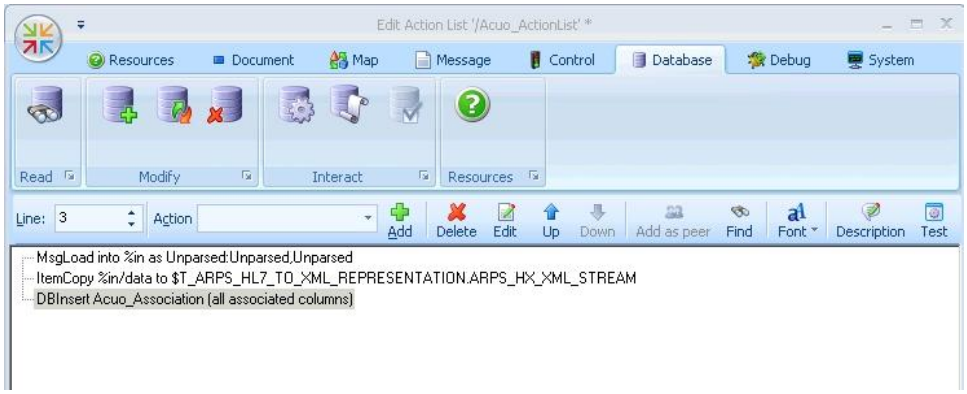
4) Click the “Map” tab at the top, then click the “ItemCopy” button (found at the far left side of the screen).
   a. In the “Source Operand” section on the left side of the screen, click the “Path” tab. Leave the default variable of “%in (Unparsed:Unparsed,Unparsed)” selected in the dropdown. The Occurrence field should be set to “Current” (this is the default and should be highlighted orange).
   b. In the “Destination Operand” section on the right side of the screen, click the “Variable” tab (if it’s not already highlighted), then select the “Acuo_Namespace” created from above in this guide. Select the “T_ARPS_HL7_TO_XML_REPRESENTATION.ARPS_HX_XML_STREAM” from the variable list (it should then appear in the “Name” field just under the “Namespace” field). Click OK to add the ItemCopy action.



5) Click the "Database" tab at the top, then click the "DBInsert" button (2nd from the left). Select the Association created above, leave the "Result" field blank, then click OK to add the DBInsert action.

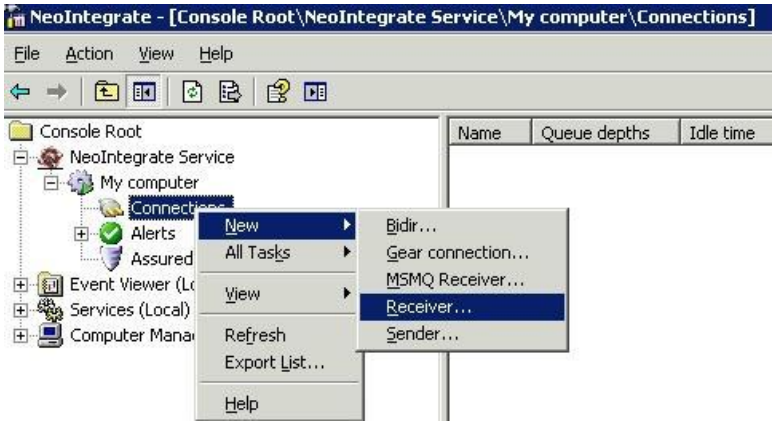


6) After completing all of the previous steps, the configuration for the Action List should look like the screen below. Verify this looks correct, then click the File menu at the top left of the screen and select "Save and Close".



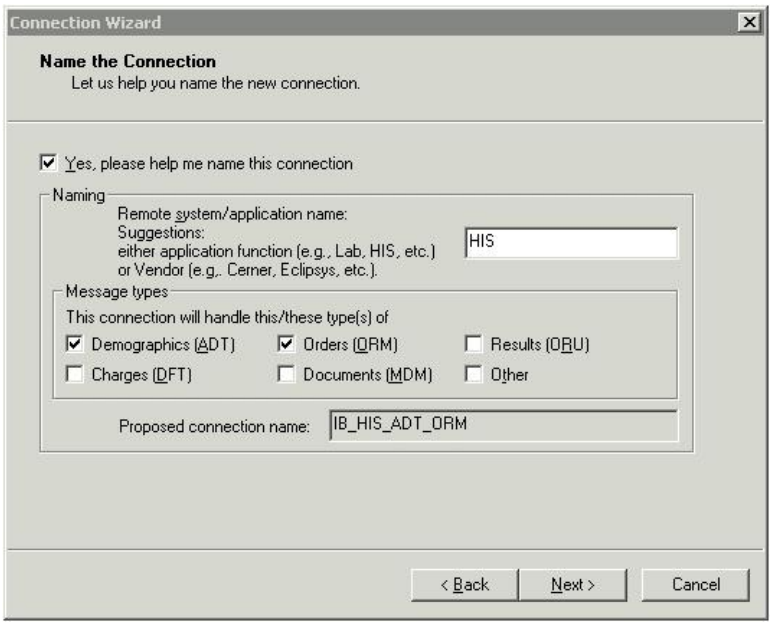
h. Set up a new **Receiver Connection**.

1) Navigate to Start Menu \ Programs \ Corepoint Health \ Corepoint Integration Engine \ Legacy Tools \ Monitor – Alerts and Status. Under the "Corepoint Integration Engine Service" node, right click on My Computer and select "Start Service" (if the service is not already started). Then go to Corepoint Integration Engine Service / My Computer / Connections. Right click Connections and select "New → Receiver…".

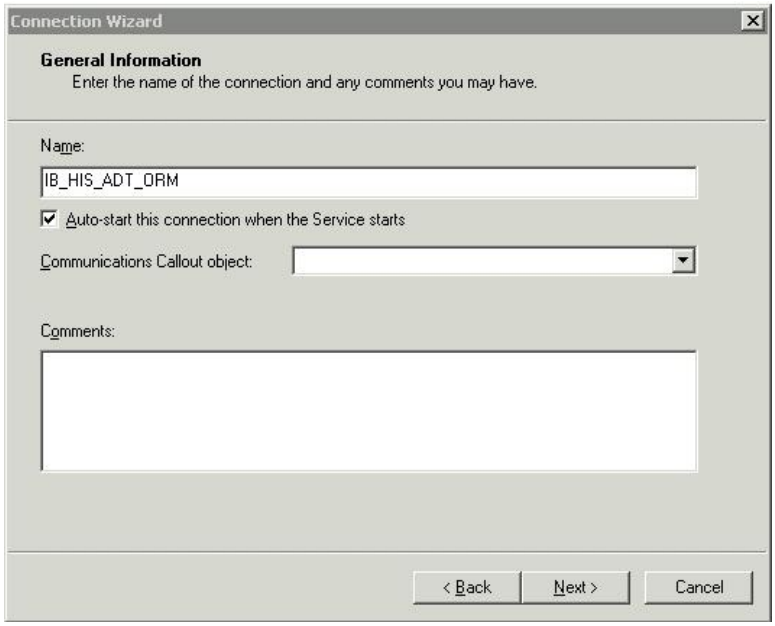


2) The connection wizard starts up.

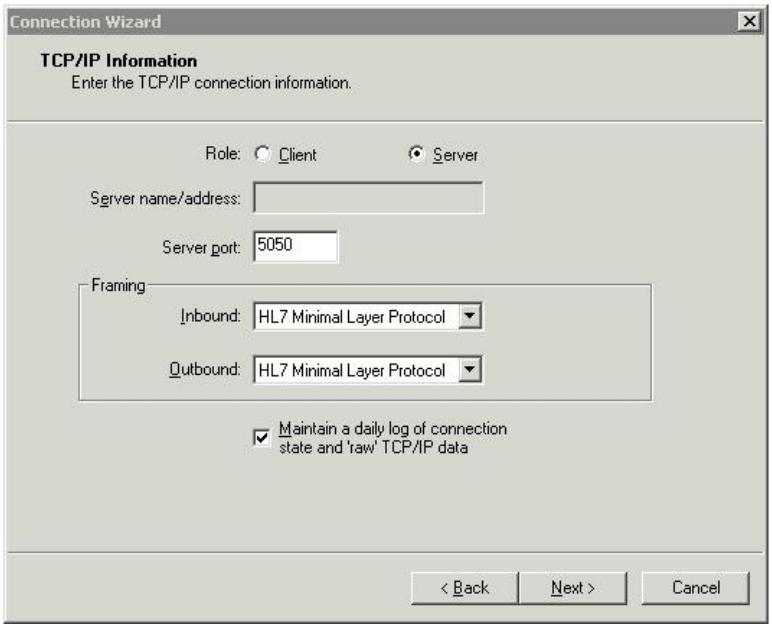
3) On the "Name the Connection" screen:
   a. Leave the box checked that indicates "Yes, please help me name this connection".
   b. Enter text in the blank field for the "Naming" section (the recommendation from Corepoint Integration Engine is to enter the remote system function, application name, or vendor that will be sending to this connection).
   c. In the "Message types" section, check the boxes for the message types that will be received on this connection. The proposed connection name is automatically renamed depending on the message types selected. In this version, ADTs and ORMs will typically be checked.
   d. Click Next.



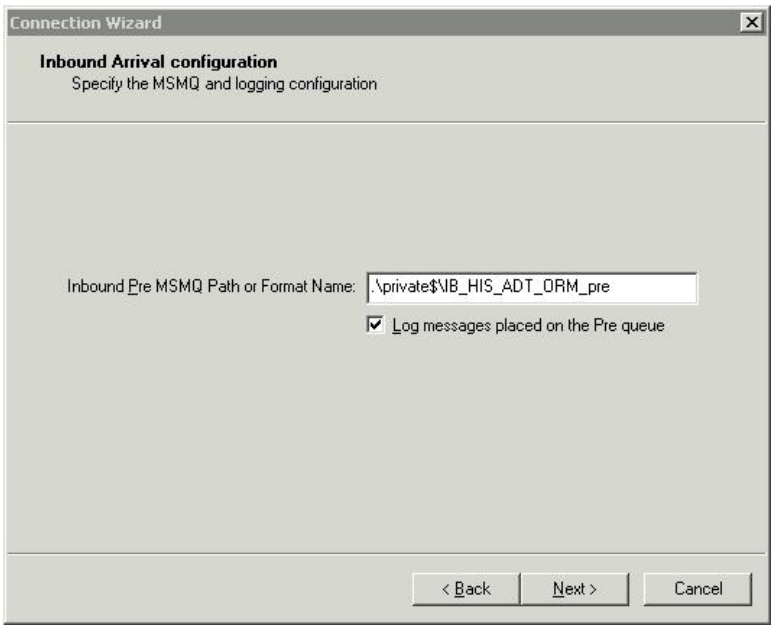
4) On the "General Information" screen, leave all defaults then click Next.



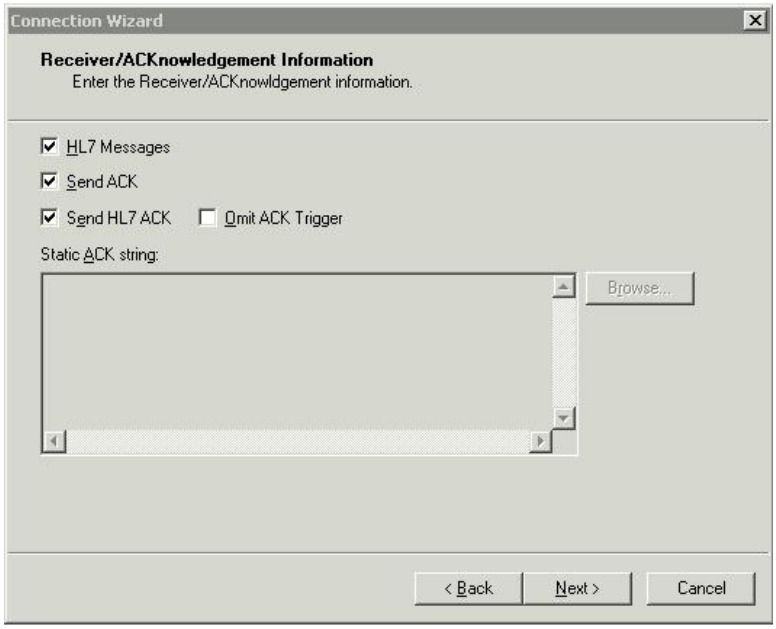
5) On the “TCP/IP Information” screen, enter a “Server Port” of 5050, leave all other defaults, then click Next.



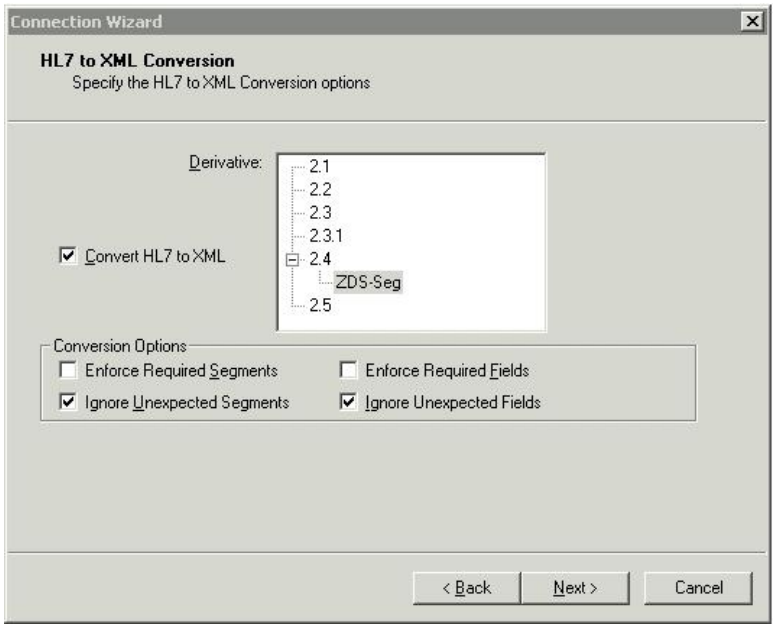
6) On the “Inbound Arrival Configuration” screen, check the box to “Log messages placed on the Pre queue”, then click Next.



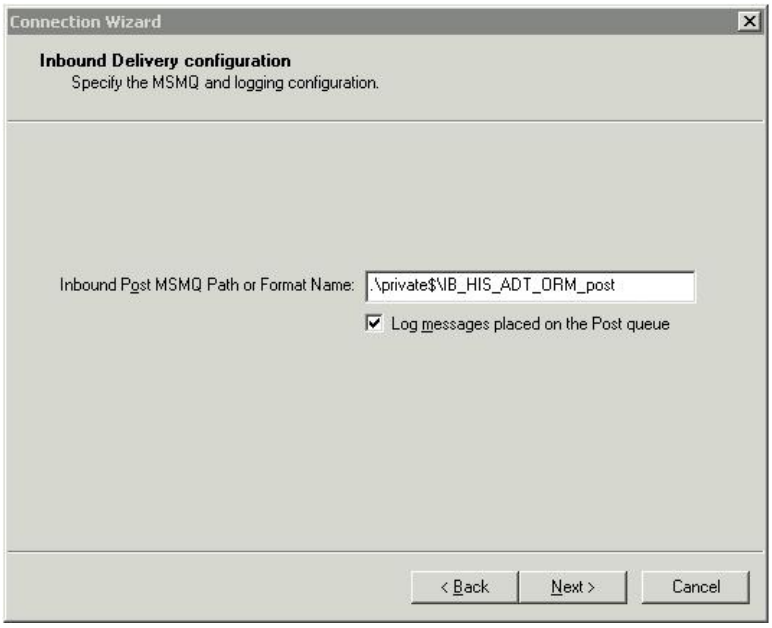
7) On the "Receiver/Acknowledgement Information" screen, leave all defaults then click Next.



8) On the "HL7 to XML Conversion" screen:
   a. Check the box for "Convert HL7 to XML".
   b. In the "Derivative" field, **select/highlight** the derivative file inside the appropriate HL7 version node. Be sure to select/highlight the derivative file subnode, not the HL7 version node (if a derivative file is being used).
   c. **Uncheck** the "Enforce Required Segments" and "Enforce Required Fields" fields.
   d. **Check** the "Ignore Unexpected Segments" and "Ignore Unexpected Fields" fields.
   e. Click Next.

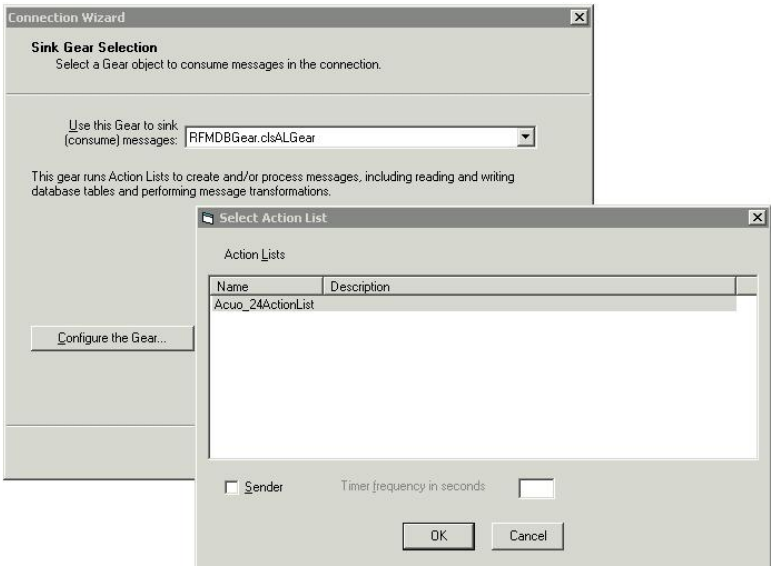


9) On the "Inbound Delivery Configuration" screen, leave all defaults then click Next.

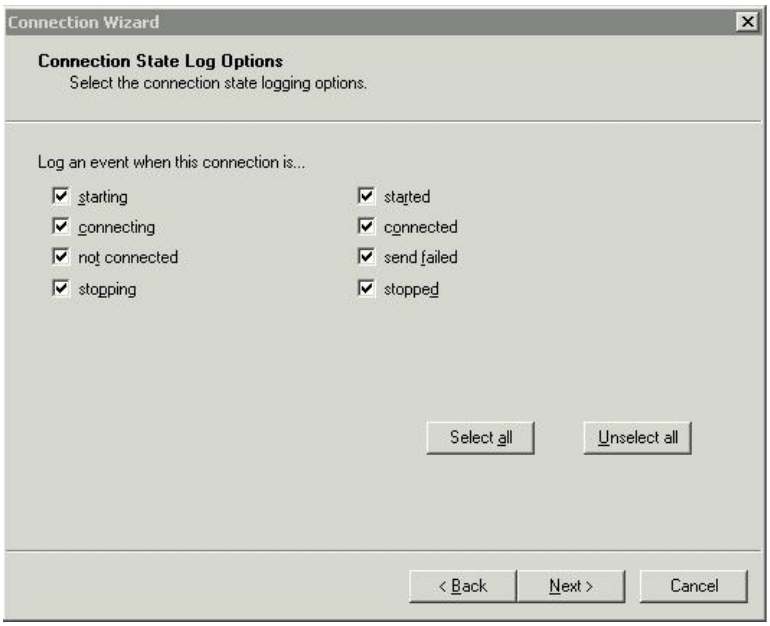


10) On the "Sink Gear Selection" screen, select "**RFMDBGear.clsALGear"** from the dropdown.
    a. Click the "Configure the Gear…" button.
    b. Select the Acuo Action List (created from previous steps above) and leave the "Sender" field unchecked. Click OK. Click Next.

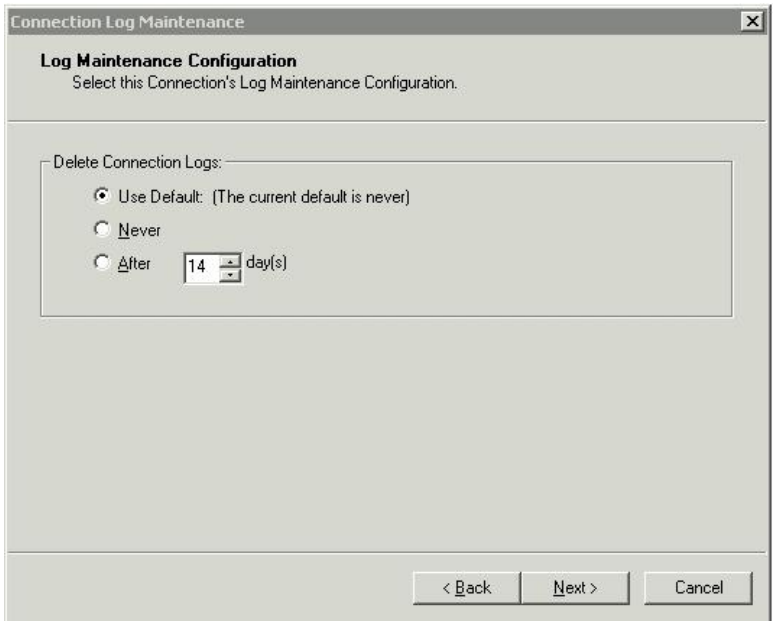
NOTE: If “RFMDBGear.clsALGear” is not found in the dropdown list, try performing one of the following to resolve the issue:
→ Go to C:\Program Files (x86)\Common Files\NeoTool\Gears\RFMDB\ and double-click gear.reg (search for this file if not found in this path).
→ Run a repair install on Corepoint Integration Engine from Control Panel / Programs and Features.



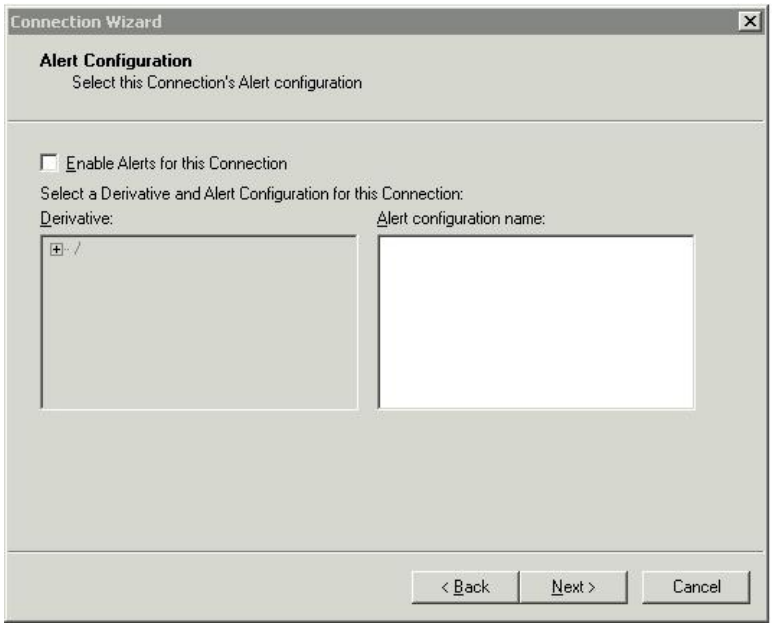
11) On the “Connection State Log Options” screen, click the button to “Select All” connection states. Click Next.



12) On the “Log Maintenance Configuration” screen, leave all defaults then click Next.

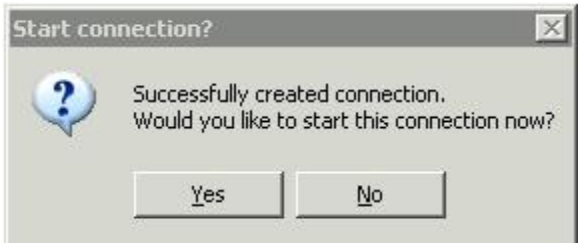


13) On the “Alert Configuration” screen, leave all defaults then click Next.



14) Click Finish to complete the configuration of the Receiver Connection.

15) Click “Yes” on the pop-up screen that follows to start the connection.



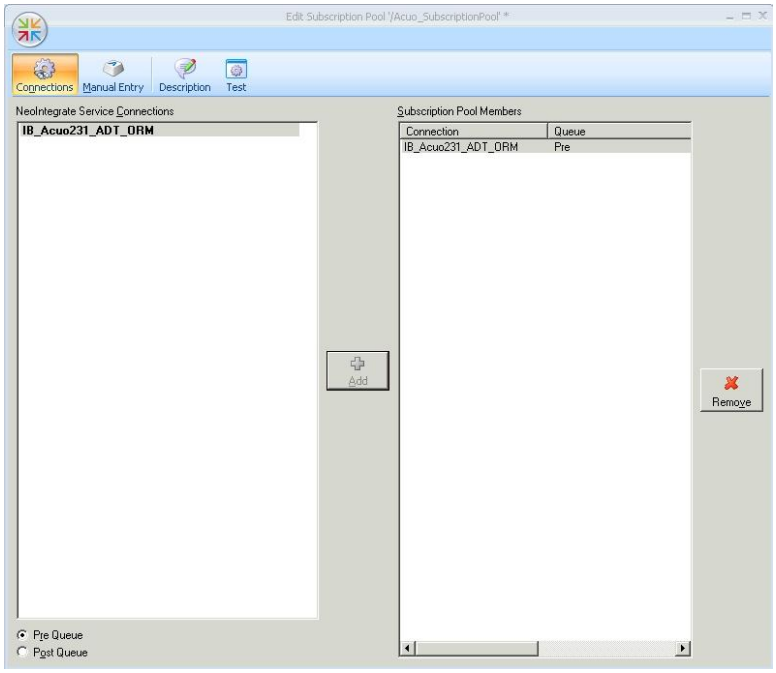
i. Set up a new **Subscription Pool**.

1) After performing the previous step, go back to the Corepoint Integration Engine Configuration setup by navigating from the Start Menu to Start \ Programs \ NeoTool → Corepoint Integration Engine → Corepoint Integration Engine Configuration.
2) Right click on the right side of the screen and select “Routing – Subscription Pool”.

3) Name it “**Acuo_SubscriptionPool**”, then click the button “Create and Edit”.

4) Add the connection created from the previous step (something like “IB_F450_MULTI”) from the left side to the right side of the screen so it appears under the Subscription Pool Members field on the right side of the screen. Leave the “Pre Queue” radio button checked at the bottom left of the screen.

5) See the screenshot of the Subscription Pool below. If this looks correct, click the File menu at the top left of the screen and select “Save and Close”.



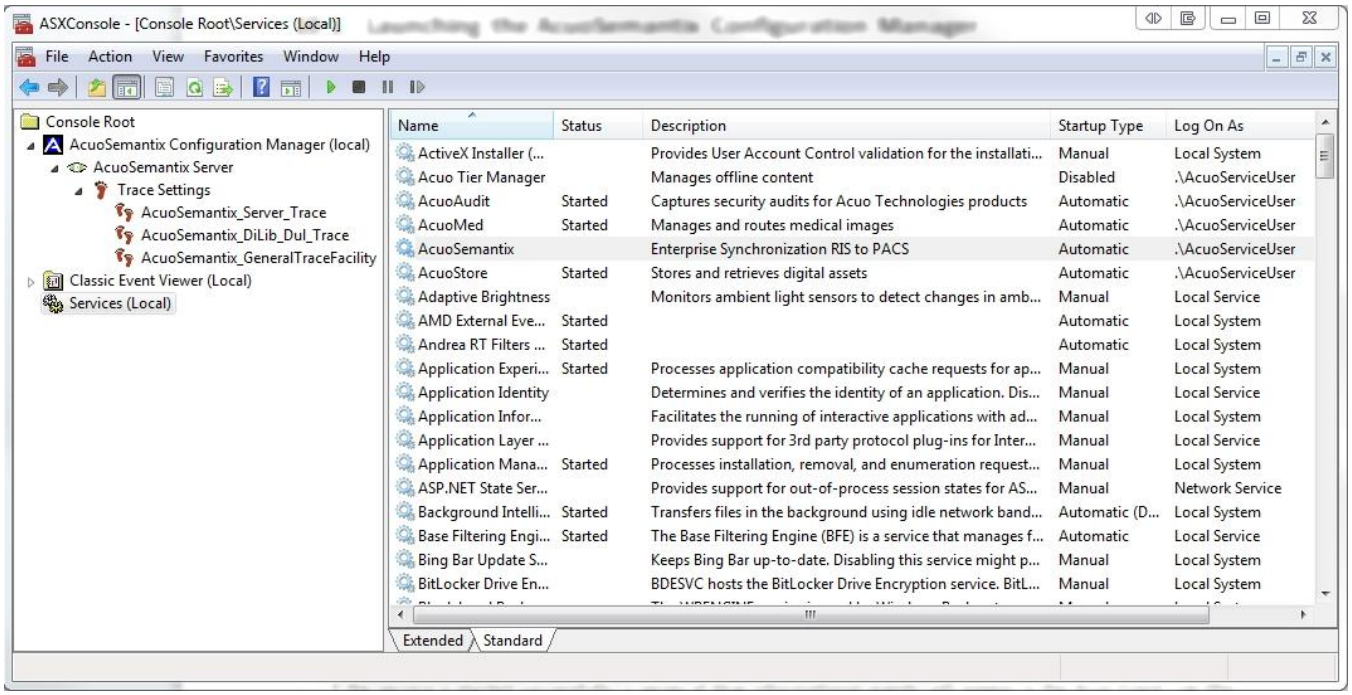
j. Restart the “NeoTool Corepoint Integration Engine Service” after the configuration is complete. This can be accessed through the standard Windows Services panel, or through the default AcuoSemantix MMC which can be launched from the “Acuo Technologies” folder on the desktop.

10. Service Startup & Message Processing

After all installation and configuration steps are completed, the service may be started and messages may be received.

10-1 Launching the AcuoSemantix Configuration Manager

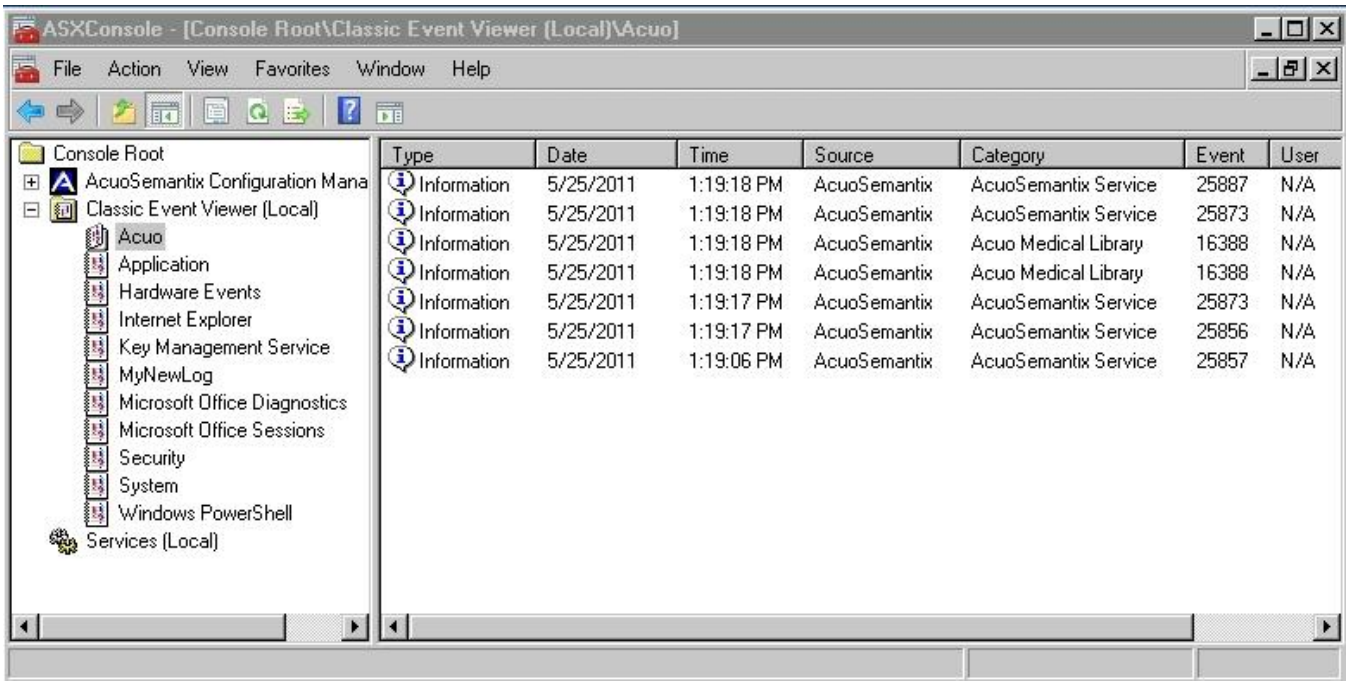
1. To start or restart the AcuoSemantix Service, open the “Acuo Technologies” folder on the desktop, click the AcuoSemantix folder, then launch the shortcut for the AcuoSemantix MMC. Go to the Services node and select the “AcuoSemantix” service. From there, click the buttons at the top of the screen or use the right click options available to stop, start, or restart the service.



NOTE: The step above describes how to launch the standalone AcuoSemantix MMC (AcuoSemantix Configuration Manager) that is present in the Acuo Technologies folder after running the installer. The Services node and the Event Viewer nodes are also included as part of the default “Acuo Technologies MMC” that is present in the “Acuo Technologies” desktop folder. Therefore, the primary items of significance in the AcuoSemantix Configuration Manager snap-in are the Database Connection Parameters (right click AcuoSemantix Server, select Change Database Connection…) and access to the Trace Settings.

Rather than opening up a separate MMC specifically for the AcuoSemantix Configuration Manager, the AcuoSemantix Configuration Manager node can simply be added to any other existing MMC. To do this, open up any existing MMC (one which may already contain AcuoMed/AcuoStore, for example), go to the File menu, select “Add/Remove Snap-in…”, then add the AcuoSemantix Configuration Manager snap-in.

2. If the service is started successfully, a series of blue informational events will appear in the Acuo Event Log (the screenshot below is after a complete restart of the service that was already running prior to the restart). There is an event output when the service is stopped, one when the service starts, some initialization messages, and 1 final initialization message when the service is ready.

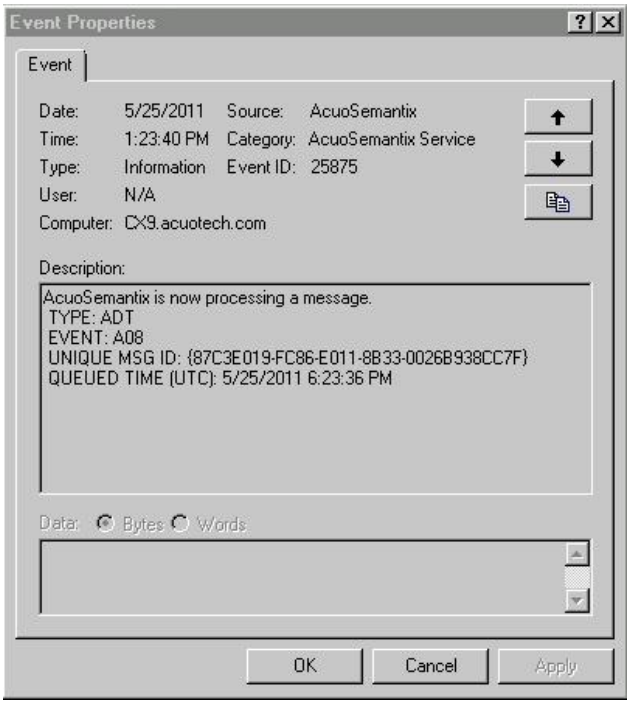


3. If the AcuoSemantix Service starts up normally and is now ready to receive messages, the last informational event output is the following: "**The AcuoSemantix service has been initialized and is ready to process Events**."

10-2 Message Processing and Verification

After the service is started up successfully, AcuoSemantix is ready to receive messages. Once messages are being sent from the HL7 source into Corepoint Integration Engine, there are a few options available to verify messages are being processed correctly or that an issue exists with message processing. The following options are available:

1. Check the Acuo Event Viewer (available from the AcuoSemantix Configuration Manager):
    - Every time a new message is received, a blue informational event will be output indicating "AcuoSemantix is now processing a message". The event also lists the message type, event type, a unique message ID, and the queued UTC time. See the following example:



- If the message above is followed by other informational events, yellow warning events, or red error events, additional investigation and troubleshooting may be necessary.

2. Look at the following 2 tables in the AcuoSemantix database:
   - **T_ARPS_HL7_TO_XML_REPRESENTATION**
   - **T_ARPS_RIS_EVENTS**
     - If these 2 tables contain a different amount of rows, that may suggest that Corepoint Integration Engine converted the message to XML and inserted it into the DB, however AcuoSemantix had trouble processing it. This scenario would not be unusual if messages are being sent in with unexpected or atypical characteristics.
     - Check the insert times of the entries in both tables to see if it coincides with the time that messages were sent in.
     - In the **T_ARPS_RIS_EVENTS** table, check the columns that end in "…PROCESSED", "…VALIDATED", and "…RESULT". These columns may indicate a problem with message processing or the inability to properly the validate the message against required message components.
       i. The "…PROCESSED" column should generally display the number 1, which indicates it was processed.
          - Also reference the parameter **SkipHL7MessagesWithErrors** under the section above "Modify AcuoSemantixConfig.xml" for other values which may be logged when messages are in error.
       ii. The "…VALIDATED" column should generally indicate "True", which means the message was properly validated.
       iii. The "…RESULT" column should generally indicate "HL7 Message processed" if it was processed successfully.

3. Review the expected behavior on the connected AcuoMed system (the ActivityList.xml configuration file will show the expected activities for each message type):
   - If UpdateAcuoHISRIS is configured as an activity for the message that was received, check the His/Ris Patient and Event tables in the AcuoMed Database to see if new patients/events are getting logged.

- On a related note, if an unusually high amount of patients are going into the Reconciliation Event Manager (REM), this may also indicate a problem that not all messages are being processed and new messages are not properly updating the His/Ris tables.

- If SendBatchMove is configured as an activity for the message that was received, check the Batch Move Manager queue on the AcuoMed system.
- If fixit activities are configured (PatientMerge, UpdatePatient, UpdateStudy), check the Batch Patient Update Queue on the AcuoMed system and verify jobs are getting logged and are completing.

4. Check the Corepoint Integration Engine Logs
    - Navigate to the C:\Program Files (x86)\Corepoint Health\Corepoint Integration Engine\Logs directory. The log folders are generated based on a Year\Month\Day format. An additional sub-folder is created under the Day folder for each receiver connection. Please reference Corepoint Integration Engine documentation for an explanation on the types of logs that are generated.

Appendix A: Version 5.3.1 Changes & Recommendations

This section contains information specific to the 5.3.1 Release of AcuoSemantix. It lists changes between AcuoSemantix version 5.2.1 and 5.3.1, as well as general configuration recommendations.

1. Product Rename
   - The product was renamed from "Acuo MedSemantix-es" (in 5.2.1) to "AcuoSemantix" (in 5.3.1). There may still be some areas in the GUI, MMC and/or Database that reference the old product name (these will be less common for new installs of 5.3.1).

2. Installation Changes & Enhancements
   - In 5.3.1, user can now modify the service logon information (service user name & password) or create a new user to run the service during install.
   - In 5.3.1, user can now modify the AcuoSemantix database name and login during install, and/or change the location of the database data and log files.
     - Previously in 5.2.1, the database name could not be changed and was always "MedSemantix-es". In addition, the database data and log files were automatically placed in the default database location as defined in SQL Server.

3. AcuoSemantixConfig.xml (formerly ARPSConfig.xml)
   - The configuration file "ARPSConfig.xml" from 5.2.1 was renamed to "AcuoSemantixConfig.xml" in 5.3.1. In addition, there are numerous changes and additions for this configuration file in 5.3.1 (AcuoSemantixConfig.xml).
     - There are new parameters for this file in 5.3.1.
     - Some existing parameters from the old configuration file have been renamed.
     - Please reference the section in this manual titled "Modify AcuoSemantixConfig.xml" for details on these changes. All parameters that are new to 5.3.1 have the text "new in 5.3.1" listed at the title of the parameter (in parenthesis). All parameters that have been renamed have the text "renamed in 5.3.1".

4. ActivityList.xml
   - A new activity called "PatientMerge" is present in 5.3.1. This activity will queue a Patient Merge Fixit message to the Batch Patient Update Manager.
   - Previously in 5.2.1, the UpdatePatient activity queued the merge fixit message. In 5.3.1, the PatientMerge activity queues the merge fixit, and the UpdatePatient activity only queues a Patient Update fixit.
   - This activity should generally be configured for any merge message. Please reference the section in this manual titled "Modify ActivityList.xml" for further details.

5. Other XML files
   - There are some notes, recommendations and requirements that are applicable to other XML configuration files used by AcuoSemantix in 5.3.1. Although these files may vary from site to site and are generally created during initial implementation by Acuo Technologies, the information listed here may help in understanding further details on AcuoSemantix functionality.
   - **PatientUpdate.xml** (Required Change in 5.3.1)
     - In the PatientUpdate.xml file, any merge message should have the Surviving PID listed as the Match tag. Previously in 5.2.1, the Match tag was the Non-Surviving PID.
       - This recommendation coincides with the change in 5.3.1 where the Patient Merge is now a separate activity.
     - In addition, the only Dest tags (or Change tags) that should be configured for ANY message type are the following: Patient Name, Patient Birth Date, Patient Sex
   - **HL7TagMap.xml** (Enforce Required Fields Recommendation)
     - The HL7TagMap.xml file defines which fields from an inbound HL7 message are marked as required. Required fields can be designated for each message type.
     - If a required field is set for a particular message type, and that message is received WITHOUT the required field present, no processing will occur and the message will be marked as a "non-retryable" error in the

AcuoSemantix database. This is preferred, since it prevents potential unwanted behavior for a message that is not considered valid.

- Recommended required fields:
  - ORM Messages: Patient ID and Accession Number
  - ADT Merge Messages: Non-Surviving PID & Surviving PID
  - Other ADT Messages: Patient ID

- **PatientMerge.xml** (New File in 5.3.1)
  - This file is new in 5.3.1, and only lists merge type messages. It was not present in version 5.2.1.
  - This file contains 2 relevant tags for each merge message:
    - Match Tag: Non-Surviving PID
    - Dest (Change) Tag = Surviving PID

6. Error Processing
   - In previous releases, if an HL7 message could not be successfully processed it was logged in the database as an error, however messages in error were never retried automatically.
   - In 5.3.1, the default behavior for AcuoSemantix is now to automatically retry (or attempt to reprocess) messages in error, assuming the message in error is classified as "retryable". Messages in error classified as "non-retryable" will never be retried on their own, and thus behavior is the same as in 5.2.1.
     - Example of message logged with retryable error: A fixit could not be queued to AcuoMed because the AcuoMed service was being restarted at the time.
     - Example of message logged with non-retryable error: An HL7 message is received that is corrupted or has a missing Patient ID.
   - Please reference the section in this manual titled "Modify AcuoSemantixConfig.xml", and go to the description for parameter **SkipHL7MessagesWithErrors** for further details.

Appendix B: FAQs

General Questions

1. How does assigned patient location (where the exam will occur) information inside an HL7 message get used by AcuoSemantix and the connected AcuoMed system?

If a new HL7 message is received and data is present in the Assigned Patient Location segment (typically the PV1-3 segment), it will automatically get added to the "(FFFF,0007) AcuoSemantix Prefetch Location" tag of the Dicom Tag Customization node on the AcuoMed machine. The contents of the AcuoSemantix Prefetch Location tag are therefore available as a pre-populated list when configuring prefetch rules on the AcuoMed server. This can increase the speed and efficiency in setting up prefetch rules driven by inbound HL7 messages. If a prefetch rule is set up and the assigned patient location from the HL7 message matches a prefetch rule, that prefetch rule (and its parameters) will be used to generate a Batch Move job on the AcuoMed system (prefetch).

Note: There is currently a limitation on new installs where this data is not getting added automatically to the Dicom Tag Customization node. To work around this issue, manually add a value to the Dicom Tag Customization node for the tag "(FFFF,0007) MedSemantix-es Prefetch Location". After manually adding a value, all subsequent messages received will automatically have their values added.

2. What are the minimum configuration requirements in order to (only) capture sample inbound HL7 messages ?

Part of the implementation process for AcuoSemantix requires sample messages to be captured. The following are the minimally required steps to capture inbound messages in Corepoint Integration Engine's log:

a. Install Microsoft Message Queuing (MSMQ). See the section above titled "Corepoint Integration Engine System Pre-Requisites" for details on how to install MSMQ. Note this may have already been previously done if a new receiver connection (see steps below) is simply being added to an existing system.
b. Install Corepoint Integration Engine. See instructions above under the section "Install Corepoint Integration Engine".
c. Set up a new Receiver Connection. The following are the basic steps to set up the receiver connection to only capture inbound data:
    - Create a simple action list with only a MsgLoad action (unparsed).
    - On the "Name the Connection screen", name the connection and select all message types.
    - On the "General Information" screen, leave all defaults.
    - On the "TCP/IP Information" screen, enter a port and leave all other defaults.
    - On the "Inbound Arrival Configuration" screen, **check the box to "Log messages placed on the Pre queue"**.
    - On the "Receiver/Acknowledgement Information" screen, leave all defaults.
    - On the "HL7 to XML Conversion" screen, leave all defaults (the "Convert HL7 to XML" check box should NOT be checked).
    - On the "Inbound Delivery Configuration" screen, leave all defaults.
    - On the "Sink Gear Selection" screen, select "RFMDB Gear", then click the Configure button and select/attach the simple action list created in the first step above.
    - On the "Connection State Log Options" screen, click the button to "Select All" connection states.
    - On the "Log Maintenance Configuration" screen, leave all defaults.
    - On the "Alert Configuration" screen, leave all defaults.
d. Restart the Receiver Connection (if not prompted to do so in the previous step).
e. Send (or initiate the sending of) HL7 messages to the Receiver Connection.
f. After messages are received, the "Pre-Log" of captured messages will be found in the following location:

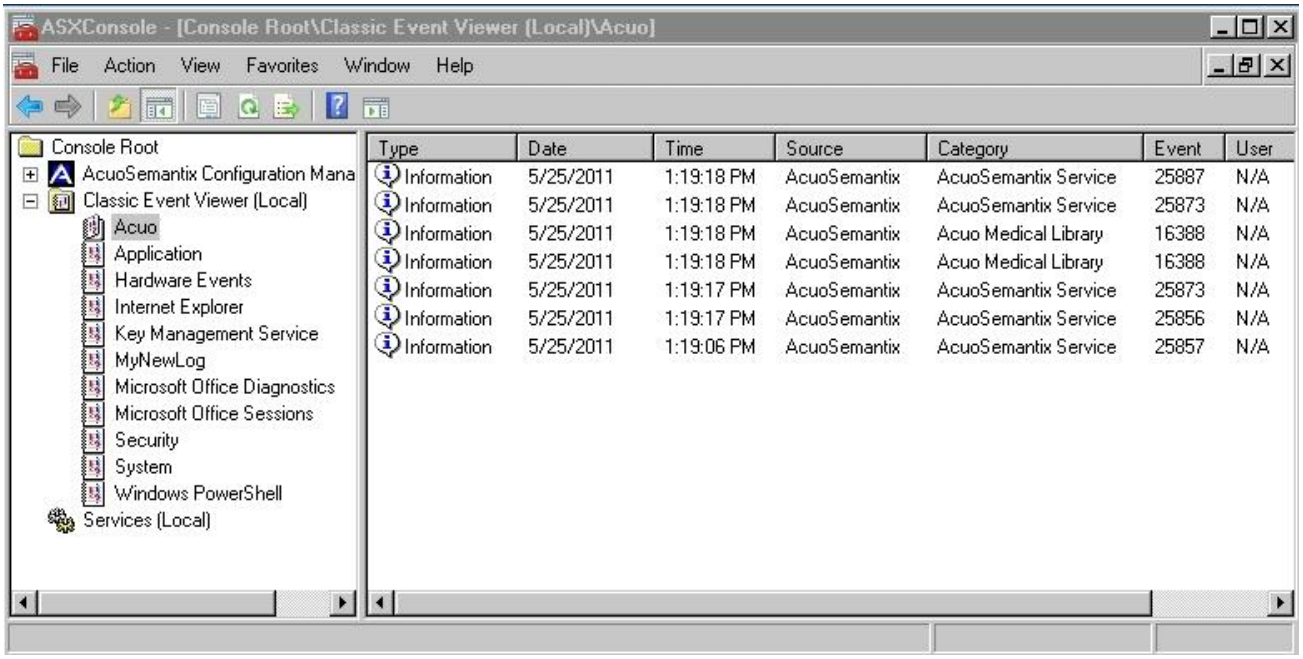
- **\ Program Files (x86) \ Corepoint Health \ Corepoint Integration Engine \ Logs ** *Year* \ *Month* \ *Day* \ *Name of Receiver Connection*
    - The “ib_pre.nil” or “ib_pre.cnz” file should contain a capture of messages as they were first received by Corepoint Integration Engine.
        - Note: The logs are first created with a .nil file extension in the current day. The next day they are compressed into a .cnz format. Both formats should open up inside the “Corepoint Integration Engine – Administration” panel.

Appendix C: Troubleshooting

This appendix describes the various steps that you can take when you encounter problems using Acuo products.

Event Viewer

- The Event Viewer within Windows lets you view multiple event logs. Each of these logs runs constantly and, when you encounter a problem, you can open the Event Viewer and select from one of the four event logs to obtain more information. To open the Event Viewer, from the Windows Start menu, select **Programs→Administrative Tools→ Event Viewer**. Note the same Event Viewer is also visible in the AcuoSemantix Configuration Manager. The screenshot below shows the Event Viewer inside the AcuoSemantix Configuration Manager.

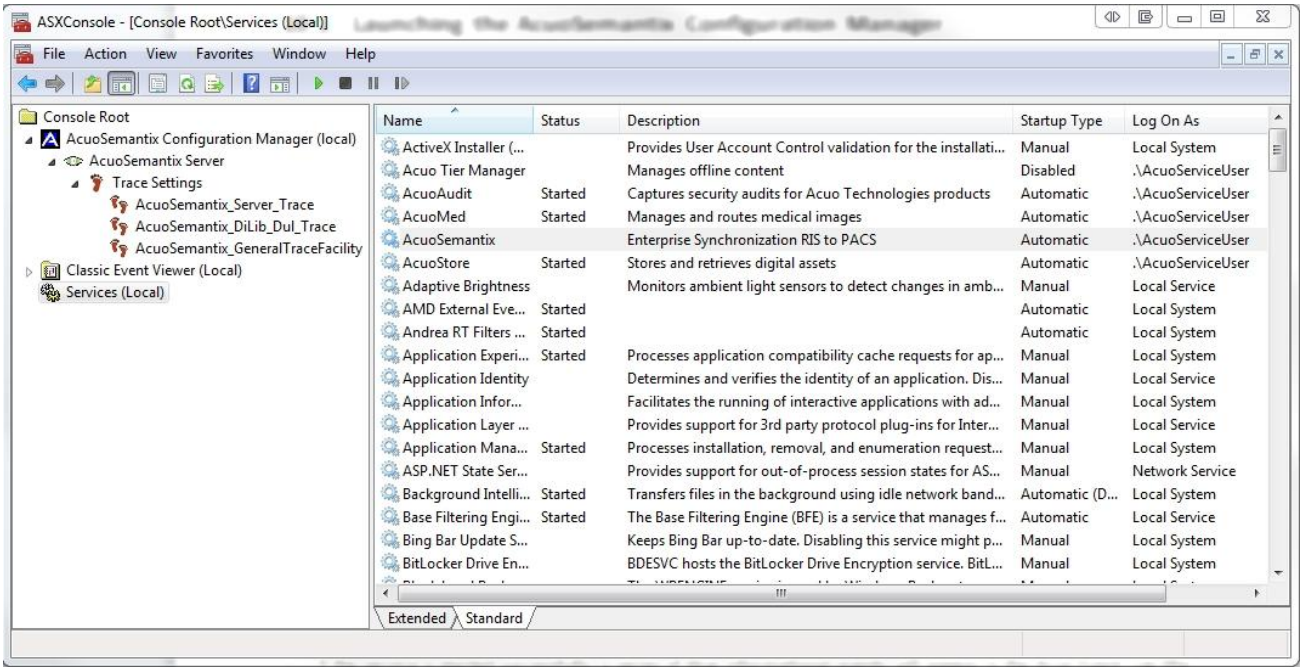


- The "Acuo" subnode inside the Event Viewer is the log that will contain information specific to AcuoSemantix.

NOTE: When using the Information, Warning, and Error messages to diagnose a problem, you should review several messages around a particular timeframe to gain a more comprehensive picture of what is happening.

AcuoSemantix Traces

- As with all Acuo products, AcuoSemantix has the capability to output tracing information to help troubleshoot and debug specific problems. To access the traces and trace settings, launch the AcuoSemantix Configuration Manager and navigate to the AcuoSemantix Server \ Trace Settings node. The individual traces and trace settings become visible.



NOTE: By clicking the Trace Settings node, you can see a summary of which traces are On or Off.

- The following 3 traces are available for AcuoSemantix:
  - AcuoSemantix_GeneralTraceFacility
  - AcuoSemantix_DiLib_Dul_Trace
  - AcuoSemantix_Server_Trace

- To change various properties for the individual traces, right-click one of the traces and select **Modify Trace Settings…** from the pop-up menu. For further assistance, please contact an Acuo Support Engineer.

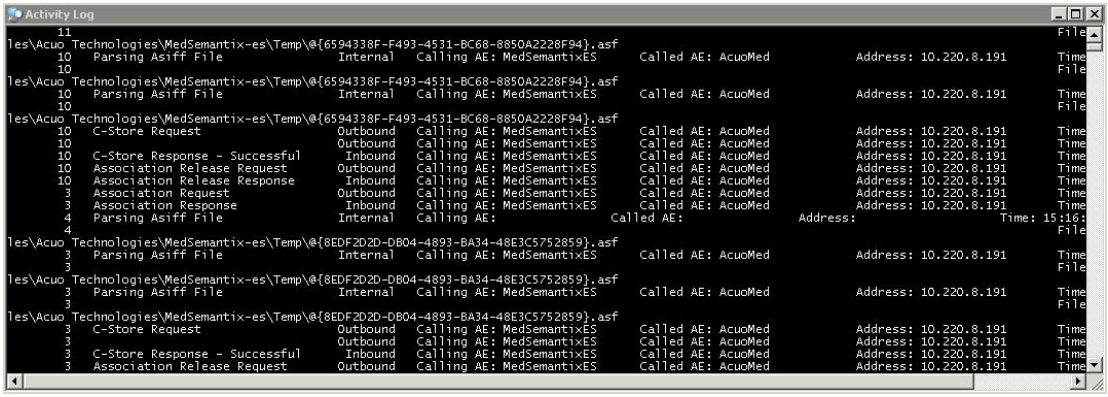
Manual Delivery of Error Trace Data

There may be cases when the Acuo Support staff will want you to manually collect and send trace information, either via email or by FTP. You need to locate, zip, and send the trace contents for AcuoSemantix. To do this, follow these steps:

1. To collect traces, navigate to the Windows directory, then the Tracing folder. This is typically **C:\WINDOWS\Tracing**.
2. Select and copy all of the trace files into a newly created folder.
3. Create a zip file with the contents of the folder and email it to an Acuo Support Engineer and/or copy it to the Acuo Technologies FTP Server. Please contact an Acuo Support Engineer for the preferred method.

Activity Log

- The Activity Log is launched by opening the "Acuo Technologies \ AcuoMed Utilities" folder on the desktop, then clicking the shortcut for the AcuoMed Activity Log.

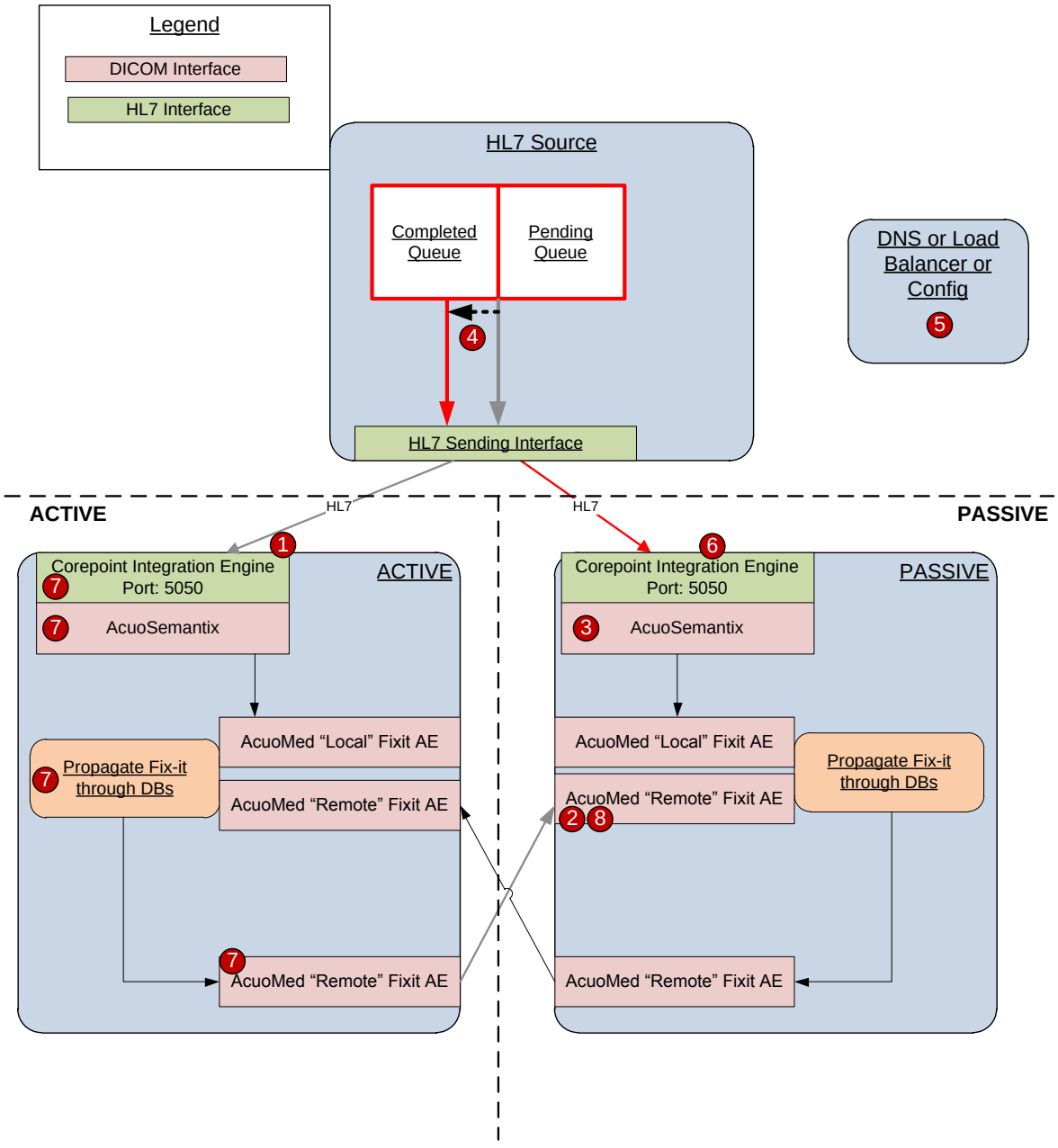


- The Activity Log displays DICOM related command activities that are occurring. For AcuoSemantix, the Activity Log will generally show communication to a connected AcuoMed when Acuo Fixit (update, merge) messages are being sent. This will appear in the form of a DICOM C-Store request from AcuoSemantix outbound to AcuoMed. The activity log is always accumulating activity regardless of whether or not it is open.
- Please reference the AcuoMed Installation and Operations Manual for further details on the Activity Log.

Appendix D: HL7 Failover Options

There are 2 states to initiate a failover involving AcuoSemantix: Unsynchronized (unplanned) and Synchronized (planned). Each of these states has different requirements and corresponding failover actions (see below).

Unsynchronized HL7 Failover (Rev 6.1)



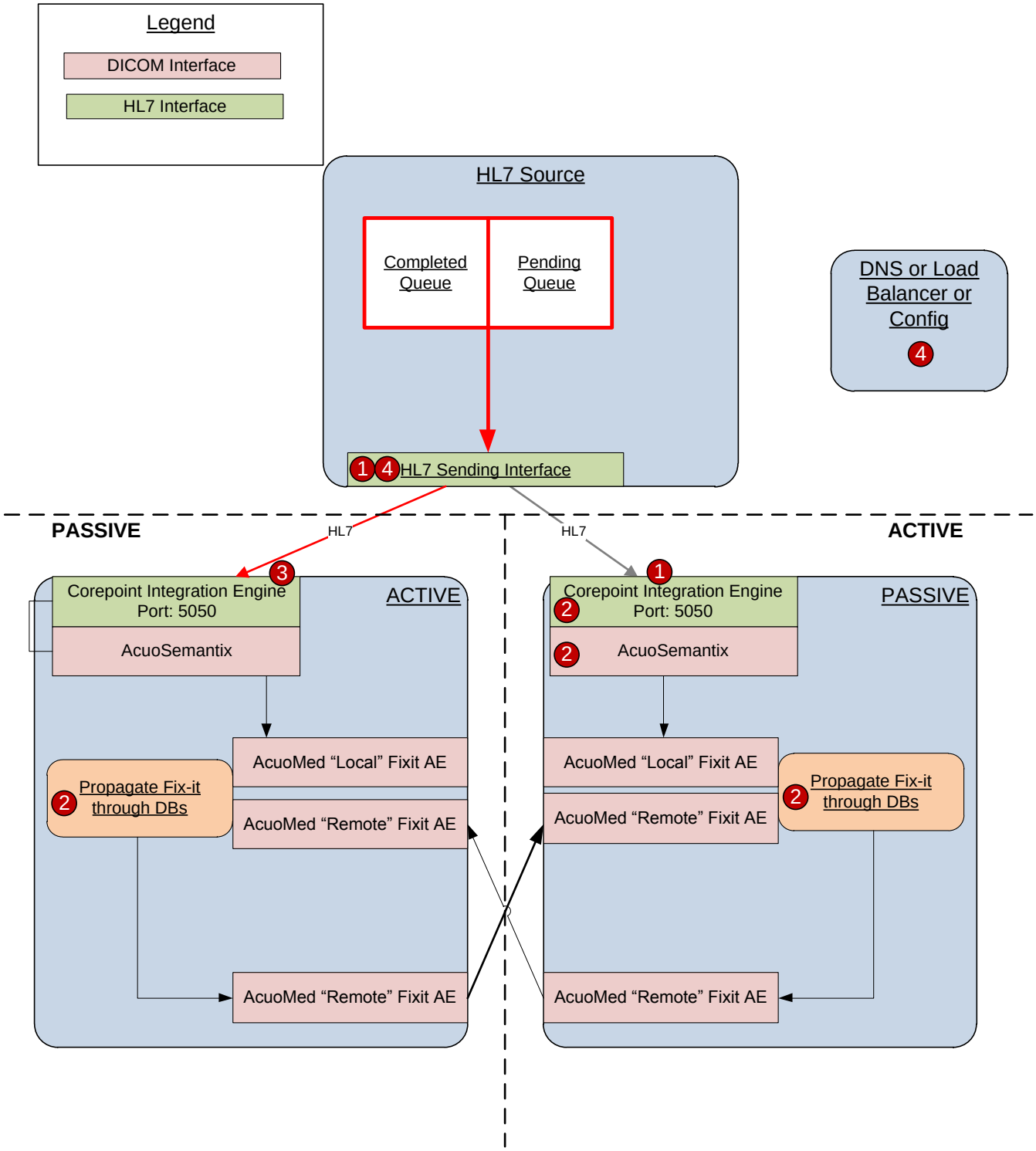
Unsynchronized Failover Requirements

1. HL7 Source has capability to resend up to 30 days of messages to Acuo without intermixing the resent messages with new ones.
2. Customer understands timing considerations (DNS time to live) and failure points which may necessitate or complicate a failover.

Unsynchronized Failover Actions

0. Determine a failover is needed (benefit outweighs cost).
1. ACTIVE: Disable Corepoint Integration Engine listening interface at Active site (disable service optimal). This is essential to preventing a premature fail-back. Notify customer so they can pause the HL7 source if they desire.
2. PASSIVE: Disable SCP AE which accepts fixit messages from ACTIVE (Remote) site. Use of SCU Authorization may be most graceful method. The last fixit received on this AE will be the start time for the HL7 rewind/replay step. It's unknown how to best correlate a fixit to a point in time of the HL7 feed.
3. CUSTOMER OPTION: Disable HL7 prefetch during reception of resent HL7 messages. Missing prefetch (consistency) vs. duplicate prefetch (performance).
4. Rewind the queue on the HL7 feed to 24 hours prior to the last propagated fixit received by the Passive site.
5. Fail-over the HL7 feed via DNS, reconfiguring the HL7 source, or other means, such that the source now points to the PASSIVE Corepoint Integration Engine instance.
6. Start the Corepoint Integration Engine service to start accepting HL7 messages.
7. ACTIVE: Clear/Complete/Cancel all non-complete messages in order, in the Corepoint Integration Engine & Acuo HL7 chain.
    a. Corepoint Integration Engine MSMQ
    b. Corepoint Integration Engine Pre & Post log
    c. ASX DB Tables
    d. Batch Patient Update Queue
8. PASSIVE: Enable SCP AE which accepts fixit messages from ACTIVE (Remote) site.

Synchronized HL7 Failover/Failback (Rev 6.1)



Synchronized Failover/Failback Requirements

1. All systems are operational, with no errors in the Batch Patient Update queue preventing quick final synchronization.
2. Customer understands timing considerations (DNS time to live) and failure points which may necessitate or complicate a failover.

Synchronized Failover/Back Actions

0. Determine a synchronized failover or failback is needed (benefit outweighs cost).
1. ACTIVE: Disable Corepoint Integration Engine listening interface at Active site (disable service optimal). This is essential to flushing out the queues such that both sides can be synchronized. Notify customer so they can pause the HL7 source if they desire.
2. ACTIVE: Complete all tasks/jobs in order, in the Corepoint Integration Engine & Acuo HL7 chain.
    a. Corepoint Integration Engine MSMQ
    b. Corepoint Integration Engine Pre & Post log
    c. ASX DB Tables
    d. Batch Patient Update Queue
3. PASSIVE: Enable Corepoint Integration Engine listening interface at Active site.
4. Fail-over the HL7 feed via DNS, reconfiguring the HL7 source, or other means, such that the source now points to the PASSIVE Corepoint Integration Engine instance. Resume the HL7 source if it was paused earlier.